

**A
MULTICOMPONENT
TREATMENT PROGRAMME
FOR
TEST-ANXIOUS
ELEMENTARY
SCHOOLCHILDREN**

by

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ABSTRACT

The efficacy was assessed of multicomponent treatment in reducing test anxiety, and improving self-concept and examination performance, in test-anxious elementary schoolchildren. A core programme was devised, comprising three components: systematic desensitization, cognitive restructuring and informal study skills training. Two further components, one each for teachers and parents were added, giving a "contextualised" programme. Three complementary studies compared either the contextualised programme with a no-treatment, non-identified, control condition (Study 1: $n = 40$; Study 3: $n = 24$), or the core programme with an attention-placebo control condition (Study 2: $n = 26$). It was hypothesised that Studies 1 and 3 would show significant between-group differences at posttest, with experimental subjects showing a significant decline in test anxiety and gains in achievement and self-concept. In Study 2, no significant between-group differences were hypothesised: subjects receiving the core treatment or attention-placebo programme being expected to show a similar degree of reduction in test anxiety and gain in self-concept, but no improvement in achievement.

Studies 1 and 2 were conducted concurrently. Pre-test measures were the Test Anxiety Scale for Children (TASC) and the Piers-Harris Self-concept Scale (P-H SCS), which were administered to all Standard 4 pupils at two white, English-language, co-educational schools in middle-class suburbs. In each class, those who scored above the mean in test anxiety were stratified, then randomly assigned to either contextualised treatment/non-identified control groups at School A (Study 1), or core treatment/attention placebo control groups at School B (Study 2). Post-testing on the same measures was conducted six weeks after completion of treatment. Normalised end-of-year examination scores were obtained for Standard 3 (pretest), Standard 4 (posttest 1) and Standard 5 (posttest 2).

Analyses of variance indicated significant reductions in TASC scores at post-test in both treated and control subjects in Study 1 ($p < .01$), which although greater in the treated group, did not yield a between-group difference. In Study 2, similar reductions occurred in both treated and attention-placebo groups ($p < .01$). There were no improvements in self-concept or achievement.

Analysis of pre-post changes on the four subscales of the TASC (Feld & Lewis, 1969) was useful in that it demonstrated that theoretically-relevant treatment brought about global reductions across three or four subscales, whereas in control groups reductions were more circumscribed, and found only in those subscales which might arguably be susceptible to expectancy effects.

Study 3, conducted in Standard 4 classes at School B the following year, was a replication of Study 1 except that, as a result of streaming, comparison was possible of the effects of contextualised treatment on subjects of high- and low-ability, relative to non-identified high- and low-ability controls. Pretest test anxiety scores were significantly lower, and self-concept and examination scores significantly higher ($p < .01$), in the high-ability subjects. Posttest scores indicated an interesting interaction effect; significant reductions in test anxiety occurred in treated high-ability subjects ($p < .01$), while high-ability controls showed no change. Treated low-ability subjects

showed no change, while some reduction occurred in controls. Again, no post-test changes occurred in self-concept or achievement.

Further analyses indicated that, in all three studies, IQ scores were the only subject characteristic to discriminate between experimental and control subjects who showed a clinically-significant decrease in test anxiety, and those who did not. There was a tendency towards higher IQ scores in improved treated subjects and lower IQ scores in improved non-treated or attention-placebo control subjects. Thus, concealed interaction effects underlay some of the apparent lack of between-group difference in Studies 1 and 2 in analysis of variance: a consequence of their heterogeneous (non-streamed) nature.

Possible reasons for this selective effect of treatment were discussed, illustrated by descriptive data obtained from children's groups (discussions and drawings). It was suggested that multicomponent treatment is effective in reducing test anxiety only in children of a certain level of ability who have enjoyed a measure of success in the past, and are capable of doing well in the future.

These studies suggest that the success of treatment in test-anxious college students may be due to their relatively homogeneous level of ability, and that treatment of test anxiety in the much more heterogeneous population of schoolchildren requires tailoring to suit their level of ability. Suggestions as to optimum treatment regimens followed, including the proposal that prophylactic stress management programmes be made available to all schoolchildren.

PREFACE

CONTEXT AND AIMS OF THE PRESENT STUDY

Evaluatively stressful situations in the classroom produce in some children high levels of a consciously-experienced, unpleasant emotional state with cognitive and behavioural concomitants. At such times, cognitive task performance in these children tends to be poorer, especially if the tasks are difficult or if observers are present. The currently accepted theoretical explanation of this effect is that such situations elicit cognitive-attentional deficits in high-test-anxious children which result in their dividing their attention between self-preoccupied worry and task cues, while children not so affected by evaluative situations concentrate on the task on hand (I. Sarason, 1976; Wine, 1971, 1980, 1982). High levels of test anxiety are typically related to poor self-concept (e.g. Many & Many, 1975), attribution of failure to lack of ability and giving up easily (Dweck & Wortman, 1982), high degree of sensitivity to social-evaluative cues (Dusek, 1980) and inefficient utilization of task cues (Geen, 1980).

Test anxiety in children is of concern to psychologists, educators and parents because not only is subjective distress and impaired cognitive performance produced in the short term, but it may also have serious implications in the long term, hampering the development of subsequent cognitive skills and the sense of industry and self-efficacy which has been posited as the task of the elementary schoolchild by Erikson (1950), who considered it crucial for effective later functioning in society. Furthermore, high-test-anxious children are children under stress, and may well become stressed adults at

greater risk of developing coronary heart disease, hypertension, duodenal and gastric ulcers and arthritis, all of which have been linked to chronic stress (Selye, 1974).

The seminal work on test anxiety in elementary schoolchildren was a 5-year longitudinal study by Seymour Sarason and his colleagues at Yale University (Hill & Sarason, 1966; S.Sarason, Davidson, Lighthall, Waite and Ruebush, 1960; S.Sarason, Hill & Zimbardo, 1964). This followed earlier studies of test anxiety in college students (Mandler & Sarason, 1952; I.Sarason, 1958; S.Sarason, Mandler & Craighill, 1952). Sarason and colleagues (1960) stated that they were essentially concerned with illuminating (to an admittedly small degree) the relationships and discrepancies between performance and potential in which they hypothesised that anxiety played an important part. Their research findings confirmed that test anxiety bore a negative relationship to IQ and Achievement test performance in elementary schoolchildren, as it did in studies with older children and adults as subjects (reviewed by Ruebush, 1963). This led to a considerable body of research demonstrating the debilitating effects of test anxiety on cognitive task performance and its interaction with theoretically relevant experimental conditions varying on an evaluative dimension. High-test-anxious subjects were expected to, and did, perform least well under conditions of high evaluative stress and best when evaluation was minimised, while the reverse was true for low-test-anxious subjects. Disruption of performance appeared to be attributable to the different attentional focus of high-test-anxious and low-test-anxious persons in such conditions, with high-test-anxious individuals dividing attention between self-preoccupied worry and task cues, while

low-test-anxious individuals focused more fully on task cues (Wine, 1971,1980,1981).

The more recent literature in the test anxiety field reflects a shift towards searching for means of alleviating the deleterious effects of test anxiety. Experimental approaches to alleviation have showed promise, such as those of Dusek, Kermis & Mergler (1975), Dusek, Mergler & Kermis, (1976) and especially I.Sarason's systematic laboratory manipulations (1972, a & b; 1973; 1975,a & b; 1976), which have illuminated the effects of variations in instructions and exposure to models on a variety of cognitive tasks. These studies point to the helpfulness of task instructions that direct attention away from self-preoccupied worry, directing it instead towards tasks, and provide instruction in appropriate problem-solving strategies. Such manipulations facilitate the high-test-anxious subject's performance while simultaneously maintaining the high performance of low-test-anxious persons, whereas reassurance and success feedback have been found to have a detrimental effect on the performance of low-test-anxious subjects although facilitating that of high-test-anxious subjects.

Treatment approaches up to 1980 tended to arise from an interest in specific treatment techniques rather than arising from an analysis of the nature and effects of test anxiety (Wine, 1980). This she considered to be unfortunate, in that that the practice of regarding the treatment of test anxiety as a stringent test of systematic desensitization procedures led to a view of test anxiety as differing only in degree from the specific anxieties dealt with in the behaviour modification literature, and in turn to an inappropriate focus on the emotional arousal component of test

anxiety instead of the cognitive component which she considered to be more important. Treatment programmes which aimed at reduction of emotional arousal were reasonably effective in reducing self-reported test anxiety, but seldom effective in bringing about improvements in cognitive performance whereas cognitive coping techniques, notably cognitive restructuring, appeared to show more promise in this regard (Denney, 1980, Wine 1980). This promise has not been altogether borne out in more recent studies, however, and there has been an increasing tendency to move to multicomponent packages which incorporate cognitive, relaxation and study-skills components, based on an understanding of test anxiety as a complex, many-faceted construct (Meichenbaum & Butler, 1980). Even so, results have not indicated general improvements in performance (see the review of literature in this thesis).

Research on treatment approaches in children is sparse, and, due to the variety of measures used, comparison between studies is difficult. Most studies reflect a preoccupation with an emotionality approach, with group desensitization being the most extensively studied procedure. This has resulted in significant reduction of self-reported test anxiety, and increases in performance have also been reported (Barrabasz, 1973; Deffenbacher & Kemper, 1974,a & b). Specifically cognitive treatment approaches for children have been few, and have not achieved significant success (see review of literature in this thesis).

No treatment programme for children to date appears to have been multicomponent in nature, addressing both the cognitive and emotional arousal components of test anxiety, and incorporating study-skills

training. Nor have the situational factors which might be eliciting, maintaining and increasing such anxiety been addressed. Yet Sarason et al (1960) hypothesised that the reaction of the test anxious child to test and test-like situations in the classroom reflected his experiences (psychologically and interpersonally) of similar situations in his home, and at the end of their longitudinal study the same researchers concluded that the school is not merely an arena in which familial and intrapersonal characteristics are given an opportunity to become manifest, but that school experiences play a very important role in the child's behaviour.

The present project was therefore undertaken as an attempt to develop a multicomponent treatment programme for elementary schoolchildren, which also sought to address relevant situational factors in the school and home. It follows two earlier studies by the author: Baddeley (1982), which found that the relationships between test anxiety, IQ, achievement, and self-concept in white, middle-class, Standard 4 pupils in two co-educational Cape Town elementary schools followed the same trends as overseas studies, and Baddeley (1984), which explored the effects of high and low levels of test anxiety on individual and group IQ test performance in the same population. In the latter study the author reviewed the literature on intrapersonal, familial and school factors relevant to test anxiety, and, on this basis, formulated a model of the development of test anxiety in children (Baddeley, 1984). This model serves as the basis for the formulation of the multicomponent treatment programme. The research presented here essentially concerns its implementation and evaluation in white, middle-class, Standard 4 schoolchildren.

PART ONE

**BACKGROUND
TO THE PRESENT PROJECT**

CHAPTER ONE

OVERVIEW OF TEST ANXIETY

The treatment approach to be implemented in this project is based in part on earlier study by the author (Baddeley, 1984) in which a review of relevant literature led to the development of a model of the development of test anxiety in children. A recap of this earlier literature review and model is therefore presented prior to review of the test anxiety treatment literature.

1.1 THE NATURE OF TEST ANXIETY

Much of the early research on test anxiety sought to explain the negative correlation which had been repeatedly found between test anxiety and IQ and achievement in both children and adults. By investigating the effects of test anxiety on cognitive task performance as a function of situational conditions varying in degree of evaluative stress, it was found that ego-involving instructions, task difficulty, evaluative feedback and the presence of an audience resulted in worse performance by those high in test anxiety, although their performance matched that of low-test-anxious subjects under non-stressful conditions (for reviews see Hill, 1972; Ruebush, 1963; I. Sarason, 1960; S. Sarason et al, 1960; Wine, 1971). The theoretical base for the original test anxiety research was the

Hullian drive theory which assumed that both high and low anxious persons experienced arousal in the evaluative context, but that whereas the performance of low anxious individuals was facilitated by such arousal, that of high anxious individuals was affected detrimentally by a class of task-irrelevant responses (Mandler & Sarason, 1952; Sarason, Mandler and Craighill, 1952). With the exception of Alpert and Haber's facilitating and debilitating anxiety (1960), little attention was subsequently given to the facilitating role of arousal and the prevalent assumption was that level of arousal and level of anxiety were equivalent.

In 1958, I. Sarason restated the interfering response hypothesis as follows, stressing the role of habit: he suggested that while low-test-anxious persons habitually respond to evaluative threat with increased effort and attention, high-test-anxious persons respond with self-oriented personalized responses. The overriding importance of cognitive factors in test anxiety was also recognised by S. Sarason although he viewed painful emotional reactivity as playing an indispensable part in its origins. Cognitive consequences of anxiety took on "a kind of pattern of organization", he felt, which affected the nature of subsequent experience (1966:78).

A major theoretical development followed in 1971 when Jeri Dawn Wine proposed the Direction of Attention Hypothesis. She reviewed the test anxiety literature to that date and suggested that the explanation for performance deficits of high-test-anxious individuals under stressful evaluative conditions lay in their division of attentional focus between

task- and self-oriented cues. In 1981 she presented further evidence to support a cognitive-attentional hypothesis. An overview of this evidence indicates that high-test-anxious persons are generally more self-focussed than low-test-anxious persons, being inclined to describe themselves in derogatory terms on paper-and pencil measures (I.Sarason, 1960,1975b), and having poorer self-concepts (Many and Many, 1975). Confirmatory evidence in the South African context of a negative correlation between test anxiety and self-concept in children was found in two studies by the author (Baddeley, 1982, 1984). When engaged in evaluative tasks, test-anxious persons think task-irrelevant, self-devaluing thoughts (Mandler & Watson, 1966; Mariett & Watson, 1968; Neale & Katahn, 1968; I.Sarason & Stroops, 1978), utilize fewer task cues (Geen, 1980) but are very attentive to social-evaluative cues, such as verbal reinforcement (I.Sarason & Ganzer,1962,1963) cues presented via modeling (I.Sarason,1968,1972b,1973,1975a), the presence of observers which has a negative effect (Cox, 1966,1968;Ganzer, 1968; Geen,1976), unless the observer's presence is defined as non-evaluative and helpful (Geen,1977). Success and failure feedback has a greater effect on their performance than on that of low-test-anxious persons (Weiner, 1966; Weiner & Schneider, 1971).

An interesting distinction has been drawn between the effects of the emotional and cognitive components of test anxiety by researchers who found that in specific testing situations "emotionality" scores tended to peak just before starting the test and tailed off rapidly thereafter and were not related to performance measures, whereas "worry" scores tended to

remain high before, during and after the testing situation, and were negatively correlated to both performance expectancies and actual performance (Doctor & Altman, 1969; Liebert & Morris, 1976; Morris & Fulmer, 1976; Morris & Liebert, 1969, 1970; Morris & Perez, 1972; Spiegler, Morris and Liebert, 1968). It appears that high-test-anxious individuals are more aware of their emotional arousal, because although they report higher levels of arousal than low-test-anxious persons, actual measures of physiological parameters show no differences.

Meichenbaum and Butler (1980) have summarised the maladaptive quality of the high-anxious individual's cognitions, or internal dialogue, as follows:

" (1) it is self-oriented rather than task-oriented, which serves to deflect attention from the task at hand; (2) its basic orientation is negative rather than positive, which serves to deflate motivation; and (3) it has an automatic, stereotyped "run-on" character, which has the effect of escalating rather than controlling anxiety." (p. 190)

Research in the field of achievement motivation is relevant to test anxiety as a high level of achievement motivation may be regarded as roughly equivalent to a low level of test anxiety. Weiner and colleagues have proposed that differences in achievement motivation may be related to differences in subjects' causal attributions (Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum, 1971). According to their classification system, success and failure may be attributed to four causal elements: ability, effort, task difficulty, and luck. Ability and effort are defined as

internal attributions or properties of the person. Task difficulty and luck are defined as external attributions or properties of the environment or situation. Weiner and colleagues further defined ability and task difficulty as fixed and relatively stable over time, whereas effort and luck are subject to change.

Their analysis provided a logical explanation for the effect of failure attributions on performance. They found that persons high in achievement motivation, or low-anxious, tended to attribute failure to lack of effort (an unstable, internal factor), and subsequently direct more effort and attention to the task at hand. In contradistinction, persons low in achievement motivation or high-anxious, tended to attribute failure to lack of ability (a stable, internal attribution), leading them to give up on the task.

Reactions to success followed a reverse pattern, with highly-motivated, low-anxious persons, who attributed success to the internal, stable attribute of ability, expending less effort when successful, while persons with low motivation and high anxiety tended to react to success by striving harder, even though they attributed such success to luck or task ease, which were factors beyond their control.

Wine (1980) combined responsibility attributions with task-, self- and social-evaluative cue analyses to offer an explanation for this phenomenon. She suggested that if low-anxious persons typically interpret success and failure feedback as task-relevant information, then failure

becomes a signal for more effort while success indicates that they have proved themselves and can relax. In contrast, if high-anxious persons perceive such feedback as having social-evaluative connotations, which they interpret in light of their frequently negative self-concept, then it follows that they will be more preoccupied with how they are being evaluated than with the task itself. Failure thus serves to confirm their secret fear - that they lack ability - and that it is hopeless to expend further effort, while success leads to greater effort in the hope of not disappointing the evaluator. Wine included an additional theoretical construct from attribution theory to explain the cognitive differences between persons high and low in test anxiety. This is the actor-observer distinction advanced by Jones and Nisbett (1972):

"Highly test-anxious persons are self-observers in evaluative situations, attributing their typically inadequate performance to stable negative dispositions, whereas low-test-anxious persons may be described as actors matching their behaviour to shifting situational demands." (Wine, 1980:362)

The relationship between attributions of causality and subsequent performance in children has been extensively investigated by Dweck and her colleagues (Diener & Dweck, 1978; Dweck, Davidson, Nelson and Enna, 1978; Dweck & Repucci, 1973; Dweck & Wortman, 1982). They found that even when performance was equivalent before failure feedback, children differing in attributions for failure responded differently to such feedback. "Mastery" children, as those who persisted in the face of failure were termed, made more attributions of lack of effort, which was controllable. "Helpless"

children, who gave up, were found to place relatively more emphasis on lack of ability, which they could not control. When children were asked to verbalize their thoughts during tasks following failure feedback, helpless children manifested far more negative and task-irrelevant cognitions, unlike mastery children who verbalized self-instructions and made self-monitoring comments aimed at successful task-completion. When helpless children were taught to change their attributions of failure to lack of effort instead of lack of ability, they showed an increase in task performance (Dweck, 1975).

Attributions of success made by helpless children were to such unstable factors as luck or task ease, thus irrelevant to their competence, and unreplicable. Mastery children, on the other hand, viewed success as a sign of intelligence, had faith that it would continue, and not change their view in the face of obstacles.

Dweck & Wortman (1982) drew attention to the fairly consistent picture of the maladaptive responder in the performance setting which emerges from the three research fields of achievement motivation, test anxiety and learned helplessness : that of a person who is characterised by high fear of failure, high test anxiety and helplessness.

Bandura (1977) made a distinction between his "expectations of self-efficacy" (which are conceptually similar to self-attributions and expectations) and outcome response expectancies, defined as estimates that given behaviours will lead to certain outcomes. This is an

important distinction as it is eminently possible for a person to believe that a given behaviour will lead to a certain outcome, but to doubt that he is capable of successfully performing the required behaviour. It would appear that the maladaptive responder referred to by Dweck and Wortman (1982) is someone who lacks belief in his own self-efficacy, and as stressed by Bandura, therapy is essentially a process of restoring to a client faith in himself.

1.2 AETIOLOGY OF TEST ANXIETY

1.2.1 Familial factors

Sarason et al (1960) believed that the test-anxious response could not be understood without taking account of parental behaviour. They considered that test anxiety, a personality characteristic, develops during the pre-school years and slowly stabilizes during the school years. Working within a psychoanalytic framework, they hypothesized that when parental standards are too high for a child to match, ensuing negative judgements by the parents become internalised by the child. This leads at first to hostility towards the rejecting parents, but subsequently to guilt, resulting in self-derogation and repression of hostility. This is accompanied by unconscious phantasies of parental retaliation and rejection as a punishment for the hostility. As these phantasies represent a threat to the child's dependency needs, they lead to further repression

of hostility and engagement of compliant behaviour, designed to win parental approbation. As a result, the child risks losing his ability to function independently in problem-solving situations and seeks direction and support from significant adults. This picture of dependent, unaggressive and self-derogatory behaviour is not posited as universal in all test-anxious children. In some cases, Sarason et al. expect that the defensive processes will fail to keep the strength and direction of hostility from awareness, giving rise to a different personality picture. Hill (1972) also emphasised the role of social interaction and achievement histories in the aetiology of test anxiety, but without positing internal reactions such as guilt and hostility. He saw early parental criticism as leading to a growing sensitivity to evaluation in the child who, during the school years, substitutes teachers and peers as the primary sources of evaluative feedback.

Evidence regarding attitudes and practices of parents of high-test-anxious children is sparse. There is some evidence that fathers, but not mothers, describe high and low anxious children in different terms, rating low-test-anxious children as more mature, responsible and optimistic than high-test-anxious children (Davidson, Sarason, Lighthall, Waite and Sarnoff, 1958). Interestingly, in this study high-anxious children were rated as more generous and affectionate, lending some support to the hypothesis that high-anxious children seek parental approval.

Another study investigated the behaviour of parents and children in a problem-solving situation. While parents of low-test-anxious children tended to offer effective problem-solving strategies without taking over, parents of high-test-anxious children often ignored their children's bids for security, failed to offer relevant strategies, and tended to model task-irrelevant and inappropriate behaviour (Hermans, ter Laak and Maes, 1972).

Although not specifically concerned with test anxiety, a study by Perry and Millimet (1977) explored child-rearing antecedents of low and high anxious eighth grade children (as measured by the Manifest Anxiety-Defensiveness Scale: Millimet, 1970). On the basis of completed questionnaires and observation of parent-child interaction in a problem-solving situation, the authors concluded that the family of the low-anxious child is characterised by consistency and harmony, with the child being allowed considerable freedom and independence within formally defined family rules. In contrast, the high-anxious child is more likely to come from a single-parent home, or, where parents have remained together, the family is characterised by parental inconsistency, disagreement, criticism and lack of definition of family rules. Contrary to the authors' expectations, parents of low-anxious children reported that they punished their children at a rate greater than that reported by parents of high-anxious children; however, low-anxious children felt that the punishment was fair and justified. Another finding of interest was that parents of low-anxious children attributed their effectiveness as parents to "experience and practice" more often than did parents of

high-anxious children, who attributed their effectiveness to the amount of love and affection they give their child.

Relevant findings from the field of achievement motivation indicate that poor achievement appears to be related to over-restrictive and domineering parenting (Kimball, 1953) with both babying and excessive punishment proving detrimental. Parents of high achievers appear to give more praise and approval and foster a feeling of closeness between family members (Morrow & Wilson, 1961), and encourage participation in adult discussion (Christopher, 1967).

1.2.2 School factors

Test anxiety increases in both sexes over the elementary school years, with girls showing the greater gain. Whether this represents a greater degree of defensiveness, or a genuinely lower degree of anxiety on the part of boys is, however, unclear. Differing sex-role socialization practices may make it easier for girls to admit to anxiety (Hill and Sarason, 1966). The importance of the school setting in eliciting, reinforcing, or changing this test anxious response was recognised by Sarason and his colleagues who wrote,

"The school is not merely an arena in which familial and intrapersonal characteristics are given an opportunity to become manifest. It is assumed that the behaviour of the child in school is actively and heavily influenced by the nature of his school experiences as well as by non-school factors." (Hill & Sarason, 1966:69)

Yet the vast majority of research in test anxiety has taken place in a laboratory setting. Phillips, Pitcher, Worsham and Miller (1980) appeal for a school ecological perspective, pointing out some of the elements in the laboratory situation that differ from the classroom situation, such as unfamiliar settings, interesting activities, and strangers who exercise considerable control over alternative responses. As they rightly state, this type of research does nothing to delineate which aspects of school culture might be contributing to increasing levels of test anxiety. Even when research does take place in a classroom setting, Brophy & Good (1974) point out that it is often conducted in connection with special experimental programmes, or with teachers in training, and does little to reveal what the day-to-day experience of schoolchildren is like. John Holt (1964), himself a teacher, considered even teachers to be unaware of children's classroom experience, stating that whenever a teacher turned his attention directly onto pupils, they behaved differently to their normal behaviour, which any child could verify.

One of the most illuminating accounts of classroom life is to be found in the writings of Philip Jackson (1968) who spent two years as an observer in elementary classrooms. He makes the obvious, but often overlooked, point that the true significance of the school experience should be sought in the thousands of fleeting events that combine to form everyday, humdrum routine. The school is a highly predictable environment and by the time a child moves on to high school, he has spent 7,000 hours in it. Its influence must, therefore, be considerable.

Fundamental to the school experience, in the opinion of Jackson, is the "hidden curriculum" which must be mastered by each student if he or she is to progress satisfactorily. This hidden curriculum has three chief characteristics : the crowded nature of the classroom, the continued and pervasive spirit of evaluation within it, and the unequal division of power between teacher and pupils. These three probably act synergistically in escalating test anxiety in the child who is vulnerable due to earlier unrealistic parental expectations. The present system of education makes comparison ubiquitous : grading, streaming and testing are all comparative and teacher's comments frequently involve either explicit or implicit evaluation (Leff, 1978). While the chief referent of such evaluation is educational achievement, it may also refer to children's adjustment to institutional expectations and possession of specific behavioural and character traits. Such judgements are, furthermore, not infrequently made publicly, and even "private" ones may be overheard due to the crowded nature of the classroom (Philips et al, 1980).

To the test anxious child, hypothesised as being dependent on the positive attitudes of those around him for security, the teacher is a highly significant figure. The power structure of the classroom emphasises this, and it is not surprising that Hill (1972) found that the test-anxious elementary schoolchild has a stronger motive to avoid criticism than to gain praise, but that both motives are stronger in him than in the low-anxious child.

Some of the most relevant of the few studies to take place within the normal classroom situation have explored the effects of teacher expectations (e.g. Brophy & Good, 1970; Brophy, Evertson, Harris & Good, 1973; Douglas, 1964; Mackler, 1969). Such studies provide evidence that naturalistically formed expectations may serve as self-fulfilling prophecies by limiting pupils' potential. For example, rigid streaming has been shown to lead to an increasing difference in achievement between those placed in high and low streams (Douglas, 1964; Mackler, 1969). Classroom observation studies have revealed how these expectation effects may limit potential : low-expectancy pupils were more likely to receive less verbal response from teachers (Willis, 1970), more criticism and less praise (Brophy & Good, 1970), and called upon less often in class (Denbo, 1973). As these differential behaviours were not found in all teachers, Brophy and Good (1974) concluded that the degree to which expectations were inflexible and inaccurate determined their power to act as self-fulfilling prophecies.

Naturalistically-formed teacher expectations are based on a variety of factors such as classroom performance and behaviour, hard test data, sex, physical appearance, socio-economic status, ethnic background and previous acquaintance with siblings (for reviews of sources on input see Braun, 1976; Brophy & Good, 1974). One of the factors teachers still rely on in forming expectancies concerning students' potential and/or ability-motivational discrepancies is hard test data (Fields & Kumar, 1982). Expectations based on attributions of ability are likely to be rigid and, in the case of high-test-anxious pupils, inaccurate, as their performance on both IQ and

achievement measures may be affected detrimentally due to cognitive and attentional deficits (Baddeley, 1984; Hill & Sarason, 1966; Sarason et al, 1960; Zwibelson, 1956).

Braun (1976) hypothesised that children vary in their vulnerability to such expectations on the basis of their already-existing self-image. A child who already perceives himself as competent in learning situations will require many cues from highly credible sources before altering his self-image. Similarly, if he has come to hold a negative view of his capabilities he will be difficult to convince otherwise, but ready to believe any negative feedback. Furthermore, expectancy effects tend to be more pronounced in the first grade (Brophy & Good, 1970; Rosenthal & Jacobson, 1968). This is particularly relevant in the case of the high-test-anxious child starting school who, as has been hypothesised, is already more vulnerable as a result of earlier parent-child interactions. Highly aware of social-evaluative cues, he will tend to interpret his teacher's comments in light of his already somewhat poor self-image and accept negative evaluations readily. Each successive year at school will tend to repeat this pattern, with escalating levels of anxiety leading to cognitive and attentional deficits and lowered performance which in turn offers him "proof" of his inadequacy. IQ test data serve as additional evidence to teachers that lack of ability underlies classroom performance and behaviour.

1.3 MODEL OF THE DEVELOPMENT OF TEST ANXIETY

The reviewed research yields a picture of a complex interaction of factors leading to the development and maintenance of test anxiety. By a synthesis of findings, the following model of the development of test anxiety in the elementary schoolchild was developed (Baddeley 1984).

1.3.1 Pre-school

Early parent-child interactions appear to predispose a child to the development of test anxiety (Hill, 1972; S Sarason et al, 1960). Cues indicating negative parental evaluations resulting from unrealistically high expectations are read and internalised by the child, while lack of support and constructive help in problem-solving give the child little chance to develop a sense of self-efficacy or to outgrow dependency (Hermans, ter Laak & Maes, 1972).

1.3.2 School entry and Junior Primary

High-test-anxious children have been perceived as lacking in maturity and responsibility by their fathers (Davidson et al, 1958); their parents may fail to teach effective problem-solving skills or gratify their dependency needs (Hermans, ter Laak & Maes, 1972), so that a high anxious child may enter school with the characteristics of immaturity, irresponsibility,

attention-seeking, and ineffectual problem-solving skills. Such a child is not likely to make a good initial impression on the teacher, and these primacy effects are likely to be persistent (Asch, 1946). His group placement may reflect this negative impression, regardless of his actual ability, and mere placement in a group will convey to him a considerable amount about himself and determine his classroom status and peer interaction (McGinley & McGinley, 1970). The teacher may behave in a way that conveys low expectations and limits learning opportunities (Brophy & Good, 1970). Formal assessment in the form of grades or symbols on report cards provides additional feedback to the child and his parents. All these data will be incorporated into the child's already existing cognitive structures which determine the meaning to him of evaluative situations (Meichenbaum & Butler, 1980). Since they will tend to confirm his early experiences, the negative valence and intensity of evaluative situations is likely to increase, leading to greater anxiety and a poor self-concept. Task-interfering responses, consisting of an habitual replay of negative cognitions arise in response to evaluative cues (Wine, 1971;1980,1982), and increase in strength and frequency.

The characteristics of the school, its crowded nature, ubiquitous evaluation, and the power invested in the teacher (Jackson, 1968) contribute to an environment which may be inimical to the high-test-anxious child.

1.3.3 Senior Primary

Hard test data becomes available to teachers, parents and pupils with the introduction of formal examinations in Standard 2. In government schools additional hard test data become available to teachers with the administration of the Junior Level of the New South African Group Test in Standard 4. Such hard test data are important bases of teacher behaviour (Dusek, 1980; Dusek & O'Connell, 1973). It is suggested that the high-test-anxious child's performance, by this time, may be depressed on both measures due to the debilitating effects of test anxiety (S Sarason et al, 1960), leading to an explanation of his poor achievement in terms of low ability. There is some evidence that teachers reject scores that are too discordant with their classroom experience (Brophy & Good, 1974; Wilkins & Glock, 1973), but the low salience of the high-anxious child, who by this time seeks to avoid failure (Hill, 1972), provides the teacher with little reason to disbelieve test scores.

In this model, IQ scores play an important role, leading teachers to attribute causality of performance to "native ability", a stable internal characteristic (Kelley, 1967). It is suggested that teacher expectations formed on this basis are more likely to be fixed and rigid and, in the case of the high-anxious child, possibly inaccurate, than if attributions to emotional, motivational or situational factors had been made, which could be regarded as potentially amenable to intervention.

When teacher expectations are rigid, inappropriate and acted out in behaviour, they may operate as self-fulfilling prophecies (Brophy & Good, 1974). Most children will encounter at least one such teacher in their primary school career who is prone to arriving at fixed and rigid expectancies and who teacher inappropriately as a result. With each such experience, the high-anxious child is at risk of experiencing a further eroding of self-confidence, motivation and level of aspiration, as well as a greater degree of test anxiety.

By Standard 5, there may well be a further decline in the achievement of the high-test-anxious child, providing additional confirmation of teacher expectancies. By this time, the high-anxious child has probably become "helpless", defeated by failure (Dweck, 1975). If he succeeds, he attributes this to external factors, not his own efforts or ability (Diener & Dweck, 1980). Teachers may reinforce this kind of attribution by responding to his success with surprise or even doubt (Brophy & Good, 1974).

The parents of the high-anxious schoolchild are probably also anxious about his lack of achievement; however, it is suggested that they continue to act aversively, failing to teach constructive study habits or task-related skills. One may surmise that they hold unrealistically high expectations, but tend to accompany them with the underlying message, "You can't measure up". There may be over-rigid discipline or too few set limits (Kimball, 1953), but either way there may be little discussion or sharing of views within the family. Overall, it may be hypothesised that

the high-anxious child lacks emotional security at both home and school, and is dominated by fear of failure and criticism as a result.

In terms of this model, it would appear that in order to be effective, remediation of test anxiety in children would need to address both personal and situational factors.

CHAPTER TWO

THE MEASUREMENT OF TEST ANXIETY

Before moving on to consider the treatment of test anxiety, it is important to establish how this construct is measured, and indeed, to establish how far advances in understanding based on theoretical and experimental approaches are reflected in improved measures.

2.1 MEASURES USED IN EXPERIMENTAL APPROACHES IN ADULTS

2.1.1 Self-Report Measures

In general, the terms "high-test-anxious" and "low-test-anxious" refer to persons who score at extremes on self-report measures of debilitating test anxiety, of which there are a "bewildering array" currently available (Wine, 1980). The popularity of self-report measures in the test anxiety field mirrors their popularity in psychology generally (see Kazdin (1980) for a discussion of the conceptual and practical reasons for using such measures, as well as their potential limitations). The ready use of such measures by researchers in test anxiety indicates an implicit decision on their part that the advantages of direct access to subjective experience, together with ease of administration and low cost,

outweigh potential disadvantages such as blatantly faked responses, or subjects seeking to present themselves in a socially desirable light. This may in turn indicate that societal attitudes do not commonly hold test anxiety as "socially undesirable behaviour". As stated by I Sarason (1980), testing situations have high salience for most individuals in our culture, and, as any open discussion of the topic reveals, virtually all have experienced some degree of test anxiety.

Early test anxiety self-report scales were typically multidimensional, tapping both cognitive and emotional reactions, and were measures of debilitating test anxiety. Brown (1938) sought to identify test anxious students at the University of Chicago, producing the first questionnaire, but not until 1952 was a scale developed that was published and widely used, the Test Anxiety Questionnaire (TAQ) (Mandler & S Sarason, 1952). This tapped lack of confidence before and during examinations, avoidance of IQ testing situations, and physiological changes (accelerated heart-rate and increased perspiration) during examinations. The Test Anxiety Scale (TAS) (I Sarason, 1958, revised 1972) similarly contains items tapping both the cognitive and emotionality domains, and is typically used as an omnibus measure. The Suinn Test Anxiety Behavioural Scale (STABS) (Suinn, 1969) and the Mathematics Anxiety Rating Scale (MARS) (Richardson & Suinn, 1972) both explicitly measure emotional arousal in specific situations.

Alpert & Haber's Achievement Anxiety Test (AAT), developed in 1960, is still the only instrument to measure facilitating and debilitating test

anxiety separately, and by thus recognising that individuals interpret their arousal differently, Wine (1980) points out that it reveals an implicitly cognitive theoretical base. This was followed by instruments explicitly designed to tap cognitive and emotionality factors : the Worry-Emotionality Questionnaire (WEQ) by Liebert & Morris (1967), and the Inventory of Test Anxiety (ITA) by Osterhouse (1972). These questionnaires are additionally theoretically relevant in that they measure reactions to evaluative situations in situ, as opposed to measuring general dispositions, unlike the majority of self-report test anxiety scales which are of the general dispositional type. It must be noted that the Worry-Emotionality distinction is a relative one in that the two are positively correlated, with correlations which increase as situations become more evaluative, ranging from .55 to .76. A relatively recent questionnaire designed to enhance the distinction between worry and emotionality is the Test Anxiety Inventory developed by Spielberger, Gonzales, Taylor, Algaze & Anton (1978), consisting of twenty items selected by factor analysis, divided into two 8-item subscales plus four buffer items.

In addition to varying on the cognitive/emotionality dimension, test anxiety scales vary considerably as to the nature and specificity of the evaluating situations in which respondents report feeling anxious. The Trait Anxiety Scale of the State-Trait Anxiety Inventory (Spielberger, Gorsuch & Lushene, 1970), which is not strictly speaking a test anxiety measure but is used as one, is the most general, containing no references to specific situations; while at the other extreme are scales such as

Alpert and Haber's AAT which is specific to academic examinations, and the Mathematics Anxiety Rating Scale (Richardson and Suinn, 1972).

In Wine's opinion, existing measures are subject to several limitations, one of which is the absence of information they supply regarding low-test-anxious individuals, whose lack of concern could be attributable to many factors, ranging from lack of motivation to supreme confidence in their capabilities (Wine, 1980). They also, in general, fail to supply information concerning the cognitions of high-test-anxious individuals, although there have been some promising developments, such as the Cognitive Interference Questionnaire (I. Sarason & Stoops, 1978).

2.1.2 Physiological Measures in Adults

Physiological measures have been little used in test anxiety research. There are several possible reasons for this : technically it can require a high level of mechanical sophistication and expensive equipment together with expertise on the part of the researcher in the area of psychophysiology in order to accurately record and interpret the data. Moreover, there are considerable difficulties in obtaining such data in real-life situations, and there is evidence indicating that both high- and low-test-anxious individuals show substantial increments in levels of physiological reactivity in testing situations, but differ in their interpretation of this (see Holroyd & Appel, 1980 for a discussion of this issue and a review of relevant literature). In those few studies

which have employed physiological measures, pulse rate and finger sweat print measures have been the methods of choice as they may be cheaply obtained with minimal disruption even in examination situations.

2.1.3 Performance/Behavioural Measures in Adults

Observable performance measures are designed to provide data about types of cognitive disruptions that test anxious individuals experience in evaluative situations. The majority of those used assess a wide range of cognitive and academic skills, with semester grade-point averages, course grades, and examination scores most frequently reported (Allen et al., 1980).

These are not without problems, however. For example, the grade-point average is affected by general "grade inflation", selection of a major, and entry into advanced courses. Allen & Desnauiliers (1974) found these factors responsible for dramatic improvements in both treated and control subjects. The examination score, a popular choice for its objectivity, unobtrusiveness and importance (Steven-Richards, 1975), may be influenced by simple retesting, and its use requires that such scores be normalised against the entire population of examination scores, which is seldom done. There is another category of performance measures, those directed at observation of behavioural manifestations of test anxiety. First used by Mandler & Sarason (1952), direct observational strategies were subsequently ignored until Horne & Matson (1977) used a variation of

Paul's (1966) Timed Behavioural Checklist which involved the use of observers behind a one-way mirror, who gathered 1-minute time samples of 24 mannerisms related to anxiety. Kendrick (1979) also developed a variation on Paul's checklist for measuring musical performance anxiety, which was used by Craske & Craig (1984).

2.2 MEASURES USED IN EXPERIMENTAL APPROACHES IN CHILDREN

2.2.1 Self-Report Measures in Children

Self-report questionnaires are the most common techniques in the assessment of children's fears and anxieties (Wells & Vitulano, 1984). However, unlike the situation in the adult field with its wide array of self-report devices, the only self-report measure of test anxiety to be widely used with children is the 30-item Test Anxiety Scale for Children (TASC) (Sarason et al, 1960). Factor analytic studies of the TASC indicate that it yields four factors which are : (1) a test anxiety component, (2) a component relating to remote school concerns, (3) a component concerning physiological arousal, and (3) a component called by Dunn, "Recitation Anxiety", and by Feld & Lewis, "Comparative Poor Self-evaluation", involving primarily children's derogation of themselves relative to others (Dunn, 1964, 1965; Feld & Lewis, 1967, 1969). The TASC is, however, typically used in terms of a total score, and children whose scores fall in the top and bottom quartiles of the test anxiety

distribution are regarded as being high-test-anxious and low-test-anxious respectively. Some control over the latter group may be obtained by simultaneous use of a Defensiveness Scale (Sarason et al, 1960) in which a lie scale is embedded. This enables the elimination as subjects of those children who score more than two standard deviations below the mean. The TASC asks children how they feel in a wide variety of situations, ranging from class tests to dreaming in bed at night. There is some justification for this, as the picture of the high-test-anxious child that emerges from the literature (already reviewed) is of a child who typically experiences anxiety in a wide range of evaluative situations, and may define as evaluative some situations that a less anxious child might not perceive in that light.

Another possibility for measurement in children may be the relatively recent Children's Cognitive Assessment Questionnaire (Zatz & Chassin, 1983), a 50 item scale which, when administered immediately following administration of an analogue classroom test, differentiated between high-test-anxious, and low-test-anxious and moderately test-anxious, children in that the former reported more task-interfering and off-task cognitions, and negative self-evaluations.

2.2.2 Physiological Measures in Children

The comments made in regard to use of these measures in adult subjects apply equally to children. GSR and heart rate have been infrequently

used in test anxiety research with children, and as with adults there is little evidence of a relationship between level of test anxiety and measures of physiological reactivity. (Darley & Katz, 1973; Sternbach, 1962).

2.2.3 Performance/Behavioural Measures in Children

Again, as with adult measurement, the most widely-used performance measures are classroom grades, examination scores and IQ test and subtests. The attentional deficit interpretation of test anxiety has also led to use of such dependent measures as the Central-Incidental Task (CIT; Hagen, 1967) and the the Stroop Colour Word Test (Stroop, 1935), both of which have been found to discriminate between high and low test anxious children (Dusek, Kermis & Mergler, 1975; Dusek, Mergler & Kermis, 1976; Waite, 1959).

Observational coding systems are frequently utilized to assess children's behaviours associated with varied kinds of anxieties, such as dental anxiety, anxieties related to surgery, and separation anxiety. Typically a checklist of behaviours is developed for an observer who rates the frequency of behaviours present in the subject for specified time-sampling periods in a designated environment. One such is Paul's (1966) Timed Behaviour Checklist, mentioned above, which although developed originally to assess public-speaking anxiety in adults, is currently being used with children and yielding encouraging results (Cradock, Cotler & Jason, 1978).

Direct observational rating of test-anxious children has, however, been infrequent, although some direct observation has been carried out in the classroom (e.g. Davidson & Sarason, 1961; Sarason et al., 1958; Wine, 1979), and in the laboratory (e.g. Nottelmann & Hill, 1977).

2.3 MEASURES USED IN TREATMENT APPROACHES IN ADULTS

Although self-report measures on their own may be adequate for experimental approaches to test anxiety, Allen et al (1980) do not consider them to be sufficient in assessing efficacy of treatment. They hold that the complex hypothetical construct of test anxiety, which describes relationships between subjective distress, physiological activation, cognitive disruption, behavioural avoidance, scholastic skills and intellectual performance, requires the use of multiple methods of measurement. These they envisage as encompassing the three broad domains of self-reported subjective experience, indices of physiological responses, and overt behaviour and performance. As data from these three domains have been shown to be relatively independent (Lang, 1968; Paul, 1966), Allen et al. (1980) believe them to make possible the "triangulation" of the effects of a therapeutic intervention, providing more compelling support for its efficacy. For example, a treatment that reduces self-reported anxiety and improves intellectual performance would be regarded as more effective than one which reduces subjective distress alone. Moreover, use of multiple methods helps to offset the limitations

which are unique to each, such as: (1) distortion in self-report instruments as a result of exposure to extra-therapeutic demands for change (Allen, 1970; Bernstein, 1973); (2) the baseline instability of physiological measures, and (3) the tendency of performance measures to be affected by numerous extra-therapeutic influences (Allen & Desaulniers, 1974).

The majority of outcome studies in adults employ both self-report and performance measures, but only very occasionally are physiological measures used.

2.3.1 Self-report Measures in Adults

Any of the instruments used for experiment approaches may be used as dependent measures to gauge the success of treatment. The most frequently used self-report measures in the years between 1970 and 1980 were the Suinn Test Anxiety Scale (STABS) (Suinn, 1969), the AAT (Alpert & Haber, 1960), the Test Anxiety Scale (TAS) (I Sarason, 1958; 1972), and the STAI (Spielberger, Gorsuch, & Lushene, 1970), although the WEQ (Liebert & Morris, 1967) showed an increase in popularity as treatment sought to investigate theoretical issues. Since 1980, there has been a marked tendency to employ measures of facilitative and debilitative test anxiety such as the AAT and, additionally, a measure of worry and emotionality such as the WEQ or the newer TAI (Spielberger et al, 1978). In general, a battery of self-report instruments is utilized.

2.3.2 Performance Measures in Adult Outcome Research

The most widely-used performance measures are Grade Point Average, examination scores, the Wonderlic Personnel Test (a measure of abilities), and sub-tests on intelligence measures. The problems associated with their use have been noted above with regard to their use in experimental approaches (see 2.1.3).

2.3.3 Physiological Measures in Adult Outcome Research

These have received little attention in outcome research, with only two studies adequately assessing the physiological component: Cornish & Dilley (1973), and Horne & Matson (1977). However, in view of the relative lack of synchrony between motor, cognitive and physiological response components (Craske & Craig, 1984; Lang, 1971; Rachman & Hodgson, 1974), and findings that high-test-anxious persons do not differ from low-test-anxious persons in actual physiological reactivity (e.g. Bistline, Shanahan & Jarenko, 1976; Craske & Craig, 1984; Darley & Katz, 1973; Holroyd, Westbrook, Wolf & Badhorn, 1978; Montgomery, 1977; Morris & Liebert, 1970), physiological measures may not be suitable to differentiate between those who suffer from debilitating levels of test anxiety and those who do not.

2.4 MEASURES USED IN TREATMENT APPROACHES IN CHILDREN

Treatment outcome studies in children are few, and there is much less uniformity evidenced in methods of measurement with not infrequently only one "domain" being measured.

The literature pertaining to treatment of test anxiety in children is surprising in the relatively infrequent use of self-report questionnaires in both defining who is test anxious and gauging outcome. For example, in two studies by Barabasz (1973;1975) subjects were divided into high-test-anxious and low-test-anxious solely on the basis of their galvanic skin response (no differences were found in heart rate). GSR and performance on the Lorge-Thorndike Intelligence Test were the two dependent variables used to gauge improvement. Deffenbacher & Kemper (1974a and b) used as subjects volunteers who described themselves as test anxious but no formal testing of their anxiety level was conducted. Grade-point average was the sole dependent variable. Parish, Buntman & Buntman (1976) did not preselect for anxiety in their study which employed a counterconditioning procedure. Subtests on the WISC were used as a performance measure. Bugg (1972) reported case histories of children who sought his help as a school counsellor, but who were not formally assessed.

Of those which did use a self-report questionnaire to select test-anxious children, Mann & Rosenthal (1969) and Mann (1972) used a modified version of the adult TAS, with a reading test as the performance measure, while the TASC was used by Warren, Deffenbacher & Brading (1976), Raskind & Nagle (1980), and Ribordy, Tracy & Bernotas (1981), with an arithmetic test, the WISC-R, and the Stroop Colour Word Test respectively being utilized as performance measures.

CHAPTER THREE

THE TREATMENT OF TEST-ANXIOUS ADULTS

3.1 INTRODUCTION

Several comprehensive reviews of test anxiety treatment studies up to 1980 have been conducted (Allen, 1972; Allen, Elias & Zlotlow, 1980; Denney, 1980; Spielberger, Anton & Bedell, 1976). In general, treatment approaches have tended to reflect the overall evolution of behavioural methods of anxiety management, rather than theoretical and laboratory advances made in the field of test anxiety itself. In the decade 1970 to 1980, this led to the persistence of an emotionality interpretation of test anxiety despite ample evidence, reviewed earlier, that it appears to be the "worry" component, with its cognitive and attentional deficits that is the most conspicuous feature of the test-anxious child's experience. Treatment aimed at reducing emotionality was often successful in reducing self-reported test anxiety level, but not in improving cognitive performance, this being first noted by Allen in 1972, subsequently by Spielberger et al. in 1976, and, in 1980, by Allen et al., Denney, and Wine. The delay in the direct application of laboratory research findings and theoretical advances to the treatment of test anxiety is probably attributable to the usefulness of test anxiety as a target construct for investigating basic behaviour change processes, and thus a stringent test of various treatment techniques (Wine, 1980).

The bias towards an emotionality approach, and the reflection of the overall evolution of behavioural methods, is clearly apparent in Allen et al 's (1980) review of studies of therapeutic practices with test-anxious college students between 1970 and 1978. This revealed that, of forty-nine studies, twenty-nine had used methods designed to reduce emotional arousal only, such as traditional systematic desensitization and its variants, implosion, anxiety management, cue-controlled relaxation, active coping relaxation, autogenic training, and biofeedback. Four included a combined treatment condition which included both some form of desensitization or relaxation and a cognitive component, usually comparing it with desensitization, while eight studies used solely cognitive-based treatments, for the most part study skills training, with only two employing cognitive restructuring (which focuses on theoretically relevant cognitive and attentional deficits such as negative self-preoccupation and attention to social-evaluative cues instead of task cues) on its own.

Allen et al. (1980) reported that therapy-in-general produced reliably greater improvement than no treatment on self-reported levels of test anxiety, with 50% of the studies they reviewed providing unambiguous support for this contention and a further 29% demonstrating that some interventions were more effective than no treatment. Performance measures, however, displayed a more gloomy picture, with 50% of the studies failing to show any positive effect of treatment. This pattern was even more pronounced when studies using variants of systematic

desensitization were analysed alone, with 77% showing reductions in self-reported anxiety but only 11% showing gains in performance measures.

Treatment which was more theoretically relevant, addressing the "worry" component, demonstrated greater efficacy both in reducing self-reported test anxiety and in achieving performance increments. Such treatment included combined therapeutic procedures, such as desensitization plus study skills training, or cognitive restructuring plus desensitization self-control procedures. In a review of self-control treatment approaches, Denney (1980) also found that cognitive coping techniques were more successful in promoting changes in performance measures of test anxiety than both applied relaxation techniques and self-control training techniques (71% vs 33% and 50% respectively).

Wine herself did not consider the emotionality-based approach to be entirely misguided in view of the tendency of high-test-anxious individuals to report distressingly high levels of physiological arousal, even though such levels were unsupported by physiological measures. She considered that it might well be appropriate to provide them with self-control strategies for management of emotional reactivity in addition to supplying them with reinterpretations of the arousal as facilitative (Wine, 1980). Evidence exists, reviewed by Deffenbacher (1980), that cognitively-oriented and emotionality-oriented treatment may not, in fact, differentially affect worry and emotionality, bringing about improvements in self-ratings of both, a phenomenon that appears to depend on the extent

to which therapy imparts a coping skill (Goldfried, 1977), or as conceptualised by Bandura (1977), increases the sense of self-efficacy.

Kirkland and Hollandsworth (1980) suggested that the term "test anxiety" was incorrect, and that ineffective test performance should be reconceptualised as a skills deficit. The corresponding emphasis when taking this perspective would then not be on the inhibition of an undesirable set of responses but rather on the acquisition of effective test-taking behaviours in three areas: (1) effective test-taking strategies, (2) adaptive self-instructional statements, and (3) attentional-control skills. In this reconceptualisation, arousal plays a necessary part, and should ideally be utilized as a means of enhancing test performance.

An inspection of the treatment literature in recent years reveals two main developments. Firstly, a virtually total acceptance of the necessity for inclusion of a cognitive component in treatment, although there have been criticisms regarding its efficacy; and secondly, an increasing acceptance of the need to incorporate study skills training in addition, and frequently also a relaxation or systematic desensitization component. The use of the resultant multicomponent "packages" is predicated on a theoretical model of test anxiety as a complex, multicomponent construct (e.g. Meichenbaum, 1980). Such treatment packages are proving to have greater success than single-component procedures or two-component combinations, although performance increments still fall short of expectations. This has raised some questions regarding the

hitherto taken-for-granted relationship between test anxiety and performance.

A more detailed review of the treatment literature in a historical framework follows, demonstrating the shifts in treatment referred to above.

3.2 THE DEVELOPMENT OF THEORETICALLY-RELEVANT TREATMENT 1965-1979

3.2.1 Systematic Desensitization

Treatment of test-anxious persons traditionally involved either individual (e.g. Kirk, 1952) or group counselling (e.g. Chestnut, 1965), but by the mid-sixties behavioural methods had become the treatment of choice, partly due to the rise of behaviourism in psychology in general, and partly as a result of the early Hullian drive theoretical interpretations of test anxiety. The most popular behavioural treatment was systematic desensitization, first named and developed as a formal treatment by Wolpe (1958). This he described as a process of counterconditioning: by means of relaxation training, construction of hierarchies of anxiety-eliciting stimuli, and graduated pairing of these anxiety-eliciting stimuli via imagery with relaxation, the client was given the opportunity to confront these stimuli without feeling anxiety, thus allowing the anxiety to extinguish. The relaxation training component was based on deep-muscle

relaxation as described by Jacobson (1938). Systematic desensitization has been successfully used in the treating a variety of fears and phobias, and its use in analogue research, such as treating test anxiety in largely student populations, enabled aspects of behaviour change and therapeutic processes to be evaluated. Its usefulness was enhanced by Paul and Shannon's (1966) claim that it was as effective in the treatment of test anxiety when administered in group settings as with individuals. As Wine(1971) noted, such use of desensitization in the treatment of test anxiety implicitly assumed that test anxiety differed only in degree from the specific anxieties dealt with in much of the behaviour modification literature.

Allen (1972) reviewed twelve studies using behavioural methods, eight of which dealt with parametric manipulations of desensitization (Cohen, 1969; Donner & Guernsey, 1969; Freeling & Shemberg, 1970; Garlington & Cotler, 1968; Ihli & Garlington, 1969; McManus, 1971; Mitchell & Ingham, 1970; Suinn, 1968). Three compared desensitization with re-educative counselling, (Allen, 1971; Crighton & Jehu, 1970; Doctor, Aponte, Burry & Welch, 1970) and one assessed the use of implosive counselling (Prochaska, 1971). Allen reported that desensitization was effective in reducing self-reported test anxiety in nine out of the ten studies using such measures as outcome criteria. The effects of desensitization on academic performance were more complex, however. Improved academic performance was reported in five of eight studies, with four of these combining desensitization with study counselling techniques. Allen concluded that the efficacy of desensitization by itself for

exercises in the cuing and reinforcement of specific thoughts. Others took up with enthusiasm the idea of applying conditioning principles to covert events, for example, Cautela's (1966, 1969) use of an imagery-based aversion procedure which he called "covert sensitization". This changing focus in behaviourism mirrored the "cognitive revolution" going on in the entire field of psychology generally, and Mahoney & Arnkoff (1978) consider that the research, theories and teaching of Kelly (1955), Rotter (1954) and Beck (1963) played no small part in bringing it about.

A good overview of studies utilizing self-control procedures in the treatment of test anxiety is given by Denney (1980) which presents a notably clear and well-constructed framework within which to view treatment advances. Denney orders them along a continuum in order of both relative procedural complexity, and the extent to which they place importance on cognitive restructuring rather than relaxation training as the coping skill imparted through treatment. He places self-control desensitization on a central position in the continuum, flanked to the left by applied relaxation techniques which use in vivo application of training and a self-control rationale, and flanked to the right by cognitive modification and systematic rational restructuring. This framework follows a roughly chronological order with earlier techniques to the left and later studies to the right, and is therefore used, in modified version, to structure the following section.

3.2.3 Applied Relaxation Techniques

Applied relaxation techniques constitute the simplest examples of self-control techniques for the reduction of test anxiety. They share three common features: firstly, a self-control rationale, followed by training in a variant of relaxation, which might range from progressive relaxation to breathing exercises, imagery exercises, and autogenic training, and lastly the application of such training in stressful real-life situations. In reviewing those studies which adopted an applied relaxation approach, Denney (1980) concluded that studies conducted by Russell and colleagues (Russell, Miller & June; Russell & Sipich, 1973, 1974; Russell, Wise & Stratoudakis, 1976) demonstrated the equal efficacy of cue-controlled relaxation training and systematic desensitization in reducing self-reported test anxiety, and their equal lack of effectiveness in improving performance. Applied relaxation training as used by Chang-Liang and Denney (1976), however, which gave an active, self-control rationale and explicit instructions concerning in vivo applications, proved more successful than systematic desensitization, relaxation alone, and no-treatment controls in reducing test and general anxiety and in bringing about performance increments.

3.2.4 Self-Control Desensitization

The changing emphasis on self-control and private events that came about in the late 1960's led to a questioning of the hitherto mechanistic accounts of systematic desensitization involving principles of counterconditioning and extinction. Wolpe himself (1958, 1976) remained adamant that the role played by cognitive processes was minimal, but as Mahoney & Arnkoff (1978) point out, there can be little doubt that this procedure traditionally relied on mental imagery. In 1969, Cautela offered a view of the relaxation training component of systematic desensitization as a self-control procedure, suggesting that clients should learn to use relaxation on their own at night to desensitize themselves to stressful events encountered during the day. But while Cautela sought to preserve systematic desensitization intact as a procedure, Goldfried (1971) went further, reinterpreting systematic desensitization as an active process, training the client to become sensitive to his proprioceptive cues for tension and to react to these cues with relaxation. This he saw as the learning of a skill to cope with anxiety, not the replacement of it.

Goldfried's reinterpretation was accompanied by modifications in both the rationale advanced to clients, and the procedure of desensitization itself. Clients were told they were learning a relaxation skill during treatment sessions that they could use whenever they felt anxious in any setting. Thus they were taught to recognise tension cues as signals to relax, and given practice in doing so in imagined scenes presented by the

therapist. Procedural modifications included greater attention to relaxation training, the inclusion of diverse themes into the hierarchies, and practice outside of sessions in real-life settings with subsequent report-back and discussion. Perhaps the greatest departure from Wolpe's procedure was that Goldfried did not terminate the imaginary scene when his clients signalled a disruption in their state of relaxation. Instead, he instructed them to hold the image until they had relaxed away their anxiety, and not until then was the scene terminated.

Self-control desensitization was successfully used in the treatment of test anxiety in several studies (Deffenbacher, Mathis & Michaels, 1978; Deffenbacher & Parks, 1979; Denney & Rupert, 1977; Spiegler, Cooley, Marshall, Prince, Pucket & Skenazy, 1976; Zernmore, 1975). The first of these, Deffenbacher, Mathis and Michaels (1978), compared it with a procedure known as relaxation-as-self-control, developed by Deffenbacher (1976), which differed from self-control desensitization only in giving relatively greater emphasis to relaxation than to guided rehearsal. Subjects in both groups reported significantly less debilitating test anxiety, less worry, less emotionality before an abilities test, more facilitating test anxiety and more generalization, than untreated controls. Although experimental group subjects, when compared with untreated controls, failed to show superior performance on the abilities test, they did achieve higher grade point averages at the end of the year.

Spiegler et al (1976) and Zenmore (1975) compared self-control desensitization with traditional systematic desensitization, and found

them to be equally effective in reducing self-reported debilitating test anxiety, but failed to include a performance measure. Deffenbacher and Parks (1979), making the same comparison, found that both successfully reduced self-reported test anxiety and general anxiety, but not performance on the Wonderlic Personnel Test.

Denney and Rupert (1977) devised an interesting study to investigate the relative effectiveness of Goldfried's modifications by differentiating between the rationale and procedural modifications, and so devised a two-by-two factorial design, (1) a self-control rationale with a self-control procedure (as in Goldfried, 1971); (2) a self-control rationale with a standard desensitization procedure; (3) a passive, counterconditioning rationale with a self-control procedure, and (4) a passive counterconditioning rationale with a standard desensitization procedure (as in Wolpe, 1958). A no-treatment control group and placebo group were also included in the study. Their results lent support to use of Goldfried's modifications in toto, as this was not only successful at reducing self-reported debilitating anxiety, but also improved performance on an abilities test and increased scores on a measure of facilitating anxiety. Denney reported,

"It seemed as though the rationale and procedural modifications recommended by Goldfried interacted in a synergistic fashion to produce a technique which was substantially more effective than systematic desensitization alone." (1980:226)

3.2.5 Attentional Training

One of the pioneers of the conceptual shift towards cognitive methods in the treatment of test anxiety was Wine (1971b, 1973, 1974), who developed attentional training based on her "Direction-of-Attention" hypothesis (see 1.1). This procedure trained test-anxious students to redirect their attention to the test on hand, using simulated tests in place of imagery and including "coping" models who demonstrated change from negative, task-irrelevant self-statements to more positive, task-oriented, productive self-statements. Wine (1971b) compared attentional training with a combination of relaxation and attentional training, and a placebo condition which required subjects to focus on their thoughts and feelings while taking simulated tests. Her results indicated that attentional training alone and the combined procedure reduced debilitating test anxiety and improved performance on two performance measures relative to the placebo condition, but that only attentional training in its own increased facilitating test anxiety.

3.2.6 Cognitive Modification

Another pioneer was Meichenbaum (1972) who devised cognitive modification, a treatment package involving cognitive restructuring and modified self-control desensitization. Test-anxious subjects were given relaxation training, engaged in discussion on irrational thoughts they might have during tests, and then provided with imagined practice in

coping with test anxiety by means of relaxation and self-instructions to focus only on the test itself. Meichenbaum (1972) compared cognitive modification with modified desensitization, incorporating application of acquired skills to actual test-taking situations in both conditions. Cognitive modification proved superior to desensitization, improving scores on a measure of facilitating anxiety, and performance measures both at post-test and follow-up, although both reduced debilitating anxiety.

Holroyd (1976) attempted to dismantle the cognitive and relaxation components of cognitive modification in order to determine their relative efficacy. He compared four treatment conditions: (a) cognitive therapy, (b) systematic desensitization, (c) a combination of cognitive therapy and systematic desensitization and (d) a pseudotherapy control procedure. Results indicated the relatively greater superiority of cognitive therapy on its own on both self-report and performance measures.

Goldfried (1979) explains the above findings in terms of the different rationale given to subjects in the cognitive therapy condition: they alone received a self-control rationale. He considers that the finding by Meichenbaum (1972) that a combined treatment package was more effective than desensitization may have been more a function of the "coping" emphasis inherent in his treatment package, than a function of the fact that it contained relaxation and cognitive components, and that Holroyd's finding that a cognitive approach was superior may similarly have been as a result of the coping emphasis that subjects in this condition were given.

Goldfried cites as support for this interpretation, findings in Osarchuk's (1974) study which indicated that systematic rational restructuring, self-control desensitization, and a combination of the two, were all more effective than a placebo condition on various subjective measures. All subjects in this study were provided with a coping orientation, that is, they were to be taught a skill to actively and independently reduce their anxiety. Goldfried's conclusion was that the research on test anxiety suggests that therapeutic programmes using either cognitive procedures or self-control desensitization are as effective as treatment which combines the two (1977:133).

3.2.7 Vicarious Learning

Vicarious desensitization proved to be as effective as a variety of direct desensitization methods (Denney, 1974; Weissberg, 1977). Symbolic modeling was also used as a method of assisting high-test-anxious persons to become more attentive to task-relevant cues and less attentive to evaluative cues. Having models portray, but surmount their anxieties proved to be most effective (Jaffe & Carlson, 1972; Sarason, 1975). Symbolic modelling surpassed desensitisation, study skills training or flooding in reducing self-reported anxiety in a study by Horne and Matson (1977), and has also been used in conjunction with cognitive modification (Gallagher & Arkowitz, 1978).

3.2.8 Systematic Rational Restructuring

The basic assumption that emotional arousal and maladaptive behaviour are mediated by one's interpretation of situations underlies systematic rational restructuring (Goldfried and Davison, 1976; Goldfried, Decenteceo and Weinberg, 1974). It attempts to place rational-emotive therapy (Ellis, 1962) within more of a cognitive-behavioural framework, providing clearly delineated steps to enable therapists to help clients to develop for themselves the ability to evaluate potentially upsetting events more realistically. Goldfried (1979) also acknowledges the contribution of Lazarus (1966), who argued for the important role that cognitive processes play in both the maintenance and the reduction of stress reactions. Systematic rational restructuring includes a self-control rationale, guided rehearsal, and application training along with cognitive restructuring.

In a study to examine its effectiveness in the reduction of test anxiety, Goldfried, Linehan and Smith (1978) randomly assigned test-anxious undergraduates from Stony Brook Catholic University to one of three groups: rational restructuring, prolonged exposure or a waiting-list control. In the rational restructuring condition, the therapist served as a model in which he or she imagined being in a test situation while "thinking aloud", demonstrating the process of rational reevaluation and refocusing attention on the simulated test. Subjects were then exposed to a 15-item standardised hierarchy for four one-minute exposures to each,

and encouraged to identify their self-defeating thoughts (such as, "I'm going to fail this test, and then everyone's going to think I'm stupid") and attempt to re-evaluate their expectations more realistically (e.g. "Chances are I won't fail, and even if I do, people probably won't think I'm stupid. And even if they do, that doesn't mean that I am stupid"). Following each trial, subjects kept a record of their thoughts and feelings during the imaginal situations on a special in-session record form, discussing them in the group after the fourth trial presentation.

The prolonged-exposure condition served as a control for exposure to the hierarchy items as well as to any nonspecific treatment factors. Subjects were given a rationale that emphasized the importance of habituation and extinction in anxiety-reduction. They visualised the same scenes but were instructed merely to focus upon their emotional reactions to them during each of the four 1-minute exposures. Following the fourth presentation of each item, a group discussion enabled members to share their experiences.

The results of this study indicated greater anxiety reduction for subjects in the rational restructuring condition, followed by those in the exposure-only condition, with no changes for the wait-list controls. Moreover, only those subjects in the rational restructuring condition reported a decrease in subjective anxiety when placed in an analogue testing situation.

NOTE: While recognition of the central role played in the therapeutic enterprise by the client's cognitive processes became evident within the

behavioural orientation to clinical work in the early 1970's, real support for cognitive change procedures came only after the mid 1970's (Goldfried & Goldfried, 1980). It should be noted that these cognitive therapies, although fitting the general context of behaviour therapy, are more accurately described as a "loose aggregate of procedures that share a few fundamental assumptions but vary widely in their theoretical parentage and technical operations" (Mahoney & Arnkoff, 1978), a point also made by Meichenbaum (1977), and Goldfried and Goldfried (1980). According to Mahoney and Arnkoff, one may readily detect in them contributions from cybernetics and information processing, social psychology, perception, developmental psychology, biofeedback and decision theory. The treatment of test anxiety again provided opportunities for analogue research, with the difference that, finally, treatment was becoming more fitted to experimental and theoretical advances in the field of test anxiety itself.

3.3 CURRENT DIRECTIONS 1980-1986

3.3.1 The "Domains of Effectiveness" Debate

As a result of the mixed findings of the 1970's regarding the relative efficacy of combined or single-component therapeutic procedures, considerable speculation arose as to the "domains of effectiveness" (Denney, 1980) of the various procedures. Denney suggested that it seemed reasonable to assume that, based on the Liebert and Morris (1967) two-component theory of test anxiety, cognitive restructuring might have beneficial effects on the domain of "Worry", while relaxation might

operate in the domain of "Emotionality". This is similar in its logic to the proposal made by Wells and Vitulano (1984), who, using the three-systems model of fear and anxiety proposed by Lang (1971) and extended by Rachman & Hodson (1984), recommended that treatment plans for phobic or anxious children should be based on assessment of motor, physiological, and cognitive components of the problem, with selection of the most appropriate treatment strategy according to which channel(s) of anxiety were most reactive in the child.

There is some evidence, however, that this might be too simplistic a view of the relationship between treatment effectiveness and theoretical model. Deffenbacher (1980) reviewed studies bearing on this question, and discovered that most studies failed to confirm the seemingly logical predictions of the worry-emotionality model. For example, high worry students did not prove more responsive to study skills training than those high in emotionality (Osterhouse, 1972). Indeed, contrary to expectations, both types received more benefit from systematic desensitization. Finger and Galassi (1977) designed an investigation to explore this issue in which students were assigned to one of four groups, an attentional treatment, in which attention to task-relevant cues was reinforced; a relaxation treatment in which relaxation responses were reinforced; a combined attentional-relaxation treatment; and a waiting-list control group. Covert positive reinforcement was used in all three treatment groups. The investigators hypothesized that worry would be reduced and facilitating anxiety increased only for those groups receiving a cognitively oriented treatment (attentional and attentional-relaxation)

whereas reductions in emotionality were predicted only for those groups receiving an emotionality-oriented treatment (relaxation and attentional-relaxation). However, they found that worry and emotionality were reduced equally well by both types of treatment, while none brought about about improvement in performance or increases in facilitating anxiety (Note: in reviewing this study, Denney (1980) has mistakenly reported that results supporting the hypotheses were obtained).

Similarly, relaxation as self-control, self-control desensitization, and traditional desensitization were all found to reduce worry rather than emotionality (Deffenbacher & Parks, 1979; Snyder & Deffenbacher, 1977), while both worry and emotionality were reduced in another study comparing relaxation as self-control with self-control desensitization (Deffenbacher, Mathis & Michaels, 1979). A comparison of cognitively-oriented, emotionality oriented and combined treatments yielded similar reductions for both emotionality and worry (Deffenbacher & Hahnloser, 1978).

Finger and Galassi (1977) suggested that their results failed to support, and thereby weakened, the emotionality-worry distinction. Deffenbacher (1980) argued, however, that the distinction is valid, but that treatment interventions are successful for reasons other than those derived from theoretical models. Such an argument receives support from Bandura's (1977) proposal that successful behavioural change achieved by different methods is derived from increased self-efficacy, a common cognitive coping mechanism, and from Goldfried's (1977) suggestion that acquisition of a

coping skill might account for the success of varied therapeutic methods (referred to earlier). Such findings lend support to the statement by Arnkoff (1983) that therapists cannot assume that the content of treatment dictates the processes affected by treatment.

3.3.2 The Development of Multi-component Treatment Packages

Rosenthal (1980) claimed that the intermingling of affective and cognitive elements defied distinction, and that rather than try to treat them separately, more comprehensive techniques were needed, a view which had already been articulated about therapy in general by Lazarus (1976).

Meichenbaum and Butler (1980) likewise argued for a multifaceted treatment approach, proposing a complex conceptual model for the treatment of test anxiety. They considered that test anxiety could be best conceptualised as consisting of:

"several interacting components that operate on one another to produce a kind of self-perpetuating cycle, elements of which may be operating at a very stereotyped level. A pattern emerges whereby the individual's meaning system leads him or her to view physical symptoms as anxiety, which leads to self-referent ideation, which influences arousal and leads to avoidant behaviour, which only serves to further increase anxiety"

(1980:204)

In this model, the meaning system plays a mediating role, and was considered by Meichenbaum & Butler to be consistent with Bandura's (1978) reciprocal determinism system which holds that psychological functioning involves continuous reciprocal interaction between behavioural, cognitive, and environmental influences, with a central role being awarded to the "self-system" which comprises cognitive structures and subfunctions for perceiving, evaluating, and regulating behaviour.

They further held that one of the implications this has for the treatment of test anxiety is that the therapist must be concerned with the client's meaning system surrounding the evaluative situation as well as his coping behaviours and strategies. This necessitates a recognition of the different meaning systems that may underlie many of the same behaviours, and that a careful analysis of each client's test anxiety must be performed before intervention can be planned and implemented.

"The therapist needs to determine the mediating role of the individual's meaning system on factors such as his or her internal dialogue, behavioural acts, and interpretation of behavioural outcomes."

(Meichenbaum & Butler, 1980: 201)

As is evident, this type of assessment/analysis differs from that suggested by Wells & Vitulano (1984), referred to above, which would assess the relative importance of motor, physiological and cognitive factors in any client's anxiety, without ascribing a mediating role to cognitive factors.

Meichenbaum & Butler suggested that a multifaceted method already existed which could terminate this vicious cycle of test anxiety, namely the three-stage stress-inoculation training devised by Meichenbaum (1977) and Meichenbaum & Genest (1977). In the first, or educational stage, clients learn the role of cognitions in the production of test anxiety. They are then made aware of several objectives of skill training, such as skill in preparing for a stressful situation, skill in handling it, skill in coping with feelings of being overwhelmed or worried, and skill in reinforcing oneself for having coped. In the second or rehearsal stage, clients acquire a variety of coping skills to reach these objectives. Both direct action and cognitive coping skills are taught. Direct action techniques usually include progressive relaxation training with an emphasis on breathing control. Cognitive coping techniques might include inhibition of negative cognitions, programming of specific positive self-statements to cope with stress, relabelling of emotional arousal as a signal for positive action, and ways to provide self-praise. The final application phase enables clients to test out their new coping skills and add more real life practice.

While it has been confirmed that stress-inoculation training can be effective in the treatment of test anxiety (e.g. Deffenbacher & Hahnloser, 1981; Jaremko, 1978; Meichenbaum, 1972), there has been an increasing tendency to devise packages which incorporate, in addition, study-skills training derived from relevant literature such as Beneke & Harris, (1972) or Robinson (1970). This is not an entirely new departure as informal

study-skills training for test anxious students was provided as an adjunct to emotional conditioning in early investigations (e.g. Katahn, Stringer & Cherry, 1966; Paul & Shannon, 1966), and subsequently developed as an intervention in its own right (e.g. Allen 1971; Mitchell & Ng, 1972). A rationale for the inclusion of study skills training was provided by Kirkland and Hollandsworth (1980), who argued that test anxiety should be reconceptualized as a skills deficit rather than an anxiety-related disorder, stating that acquisition of effective test-taking behaviours should be the goal of therapy. Thus, they suggested that the most appropriate treatment might be one that focused on test-taking skills and also attempted to utilize arousal as a means of enhancing test performance. Supporting evidence that highly test-anxious students had less effective study habits than their low-anxious peers was found by Culler & Holahan (1980), while Galassi, Frierson and Sharer (1981) and Galassi, Frierson and Siegel (1984) reported that past achievement was a more important predictor of test performance than level of test anxiety. Brown and Nelson (1983) took a somewhat different approach and investigated differences between high and low achieving test-anxious college students, and found that they differed in number of positive and negative cognitions, degree of facilitating and debilitating anxiety, and study skills. They recommended that such differences be borne in mind when planning treatment.

3.3 RECENT OUTCOME RESEARCH

Recent outcome research in test anxiety has centred primarily around the efficacy of cognitive therapy, and which components ought to be incorporated into multi-component packages. General acceptance that high-test-anxious individuals display cognitive/attentional deficits has led to virtually unanimous agreement of the need to include a cognitive component. All published studies in the field in the past six years have included some type of cognitive treatment in one of three ways: (1) in comparison to, or in combination with, emotionality-based treatment (Cooley & Spiegler, 1980; Kirkland & Hollandsworth, 1980); (2) as part of multicomponent packages: e.g. in alphabetical order, Dendato & Diener (1986) combined cognitive/relaxation therapy with study-skills training; Harris & Johnson (1983) combined covert modeling with study-skills training; McCordick, Kaplan, Smith & Finn (1981), combined variations of cognitive modification with study-skills training; Papsdorf, Himle, McCann & Thyer (1982) combined relaxation training, thermal biofeedback training, cognitive behavioural coping, test-taking practice and systematic desensitization; (3) on its own in studies which have sought to elucidate some aspect of its precise effect (e.g. Arnkoff, 1986; D'Alelio & Murray, 1981).

The focus on cognitive therapy has resulted in findings which indicate that cognitive therapy on its own does not appear to be reliably efficacious in improving performance (Arnkoff, 1986; D'Alelio & Murray, 1981; Finger & Galassi, 1977; McCordick, Kaplan, Finn, & Smith, 1979;

Norton, 1983). This would appear to indicate that the conclusions reached in 1980 by both Denney and Wine regarding the superior power of cognitively-based treatment strategies in effecting cognitive change, may have been somewhat over-optimistic. Indeed, some of the earlier evidence for its superiority has been challenged.

An interesting study attempted to replicate Holroyd's (1976) success with cognitive therapy. Conducted by D'Alelio & Murray (1981) at the same institution, this study utilized Holroyd's manual of cognitive treatment, with Murray acting again as supervisor, as he had for Holroyd. As described earlier (see 3.1.2.6), Holroyd had compared cognitive therapy, systematic desensitization, cognitive modification and a placebo-attention condition. His variant of cognitive therapy taught test-anxious subjects to identify and challenge distracting and irrational thoughts, replacing them with self-statements which led to attending to the problem on hand, cope with panic, and reward themselves. Holroyd had found that cognitive therapy was more effective than the other treatments in improving performance, bringing about the most dramatic improvement reported in the literature: a 1.25 increase in grade point average. In their study, however, D'Alelio & Murray found that, while cognitive therapy significantly reduced scores on the STAI (Spielberger et al, 1978), there was no change in grade point average.

In seeking to account for this finding, D'Alelio & Murray suggested that Holroyd's study involved a somewhat different population, being pure volunteers rather than those recruited from the subject pool. They were

also slightly older and had somewhat lower initial grade point averages. D'Alelio & Murray hypothesized that they might therefore have been somewhat more anxious and more highly motivated than their own subjects. Be that as it may, their findings point to a lack of consistency of effect of this variant of cognitive therapy.

Further evidence as to the somewhat over-optimistic earlier view of the the potential of cognitive therapy to improve performance comes from the McCordick, Kaplan, Smith and Finn (1981) study. These researchers investigated variations in Meichenbaum's cognitive modification, assigning subjects to one of five conditions: one group received Meichenbaum's cognitive behaviour modification treatment; a second group received the desensitization component but the "insight" or cognitive component was altered by substitution of specific statements concerning pressure; a third group received the cognitive component plus test taking practice. All treatment groups received study skills training in addition. Of the two control groups, one received study skills training while the other received nothing.

The most effective combination in increasing facilitating anxiety and reducing debilitating anxiety, as measured by Alpert & Haber's (1960) Achievement Anxiety Test, was the cognitive component plus test-taking practice, but it was no more successful in significantly improving performance on the Wonderlic Performance Test than the other treatment combinations. This was a puzzling finding in light of Wine's (1971) results, which indicated that practice skills produced significant

performance changes on the Wonderlic Personnel Test. McCordick et al therefore made a close inspection of Wine's (1970) method, and found an alternative explanation of her result: Wine's sessions had included practice with the Otis Quick Score IQ items from which Wonderlic items were drawn. McCordick et al. concluded, "changes in performance may have resulted from increased familiarity with the items rather than from a reduction in test anxiety" (1981:177), a reasonable assumption in the circumstances.

Diane Arnkoff (1986) also looked at cognitive therapy, but with a different intent. She suggested that cognitive restructuring could be thought of as having two goals: a coping goal, in which individuals learn to cope more effectively with a stressful situation using such means as coping self-statements, and a restructuring goal, in which they change their beliefs about events, so that formerly stressful situations will no longer be stressful. She contrasted these two goals in an outcome study employing test-anxious subjects who were assigned to one of : a coping treatment condition, a restructuring treatment condition, or a waiting list control.

Results showed a trend in both the coping group and the combined treated groups towards lower self-reported test anxiety than controls, but treated and control subjects did not differ in state anxiety just before a final exam, nor did they differ on the Wonderlic Personnel Test. Mean grade-point averages at post-test indicated that the coping group's grades were higher than those of the restructuring group (an effect that was lost

at follow-up) but neither treated group was significantly different from the control group. Although in clinical practice, the coping and restructuring components of cognitive restructuring are combined, and thus interact with one another in a possibly synergistic way, this study adds to evidence that it may be naive to expect improvements in performance to result reliably from cognitive therapeutic interventions.

Arnkoff's study also supplies some illuminating findings regarding the lack of correspondence between therapy content and outcome, discussed above in the "Domains of Effectiveness" debate. She included two cognitive measures in her study, the Irrational Beliefs Test (Jones, 1969), many of the items of which were discussed in the restructuring group, and a thought listing measure (Cacioppo, Glass, & Merluzzi, 1979), included to assess the test-oriented self-statements focused on in the coping group. The IBT, which should have favoured the restructuring group, in fact favoured the coping group, while both groups were found to be significantly different from controls for negative thoughts on the thought-listing measure. Thus, each treatment group was significantly different from the control group at post-test on a measure chosen to reflect the content of the other treatment alone. Such findings lend support to her earlier (1983) comment that therapists cannot assume that the content of treatment dictates the processes affected by treatment.

Support for inclusion of an emotional arousal component in a multicomponent package comes from the McCordick et al. (1981) study, referred to above. Although no significant performance increments were

obtained in any group on the Wonderlic or in classroom grades, a mean improvement of .71 in Z units on the latter measure was obtained in the second experimental group which had received systematic desensitization in combination with cognitive therapy and study skills training, a result which McCordick et al. considered to be of "some practical significance". They concluded that the inclusion of systematic desensitization component exerted a more powerful effect on performance.

The relatively poor record of both behavioural and cognitive therapies in improving academic performance, despite their ability to reduce self-reported anxiety, has caused a marked shift towards recognising the validity of the skills deficit reconceptualization of test anxiety (Kirkland & Hollandsworth, 1980). Thus, a study skills training core component has been included in several recent published studies (Dendato & Diener, 1986; Himle et al 1984; McCordick et al, 1981; Papsdorf et al, 1982). Dendato & Diener compared study-skills only, relaxation/cognitive therapy, and a combination of study-skills and relaxation/cognitive, and found that only the combined treatment reduced self-reported anxiety and produced performance gains. An unpublished South African study of test anxiety management in college students by Norton (1983) obtained similar results in a comparison of cognitive therapy plus study skills, compared with the same cognitive core component combined with systematic desensitization, and the cognitive core component on its own. Cognitive therapy plus study-skills proved to be the most efficacious, reducing self-reported test anxiety and improving examination performance, while the least efficacious treatment was the cognitive core component on its own.

Taken together, these studies conducted since 1980 indicate that investigators in the field of test anxiety are becoming more aware of the complex nature of the construct. As yet, however, there appears to be little attention to possible differences in test-anxious subjects themselves, and the "myth of uniformity" (Kiesler, 1966) still prevails, in spite of Meichenbaum's (1980) call for greater attention to the individual's meaning system, or Brown and Nelson's (1983) recommendation that treatment be tailored according to achievement level. The studies also indicate that the early promise of cognitive therapy in improving performance more consistently than emotionality-based therapy has not been borne out, although its inclusion in a multicomponent package, along with study skills training, appears to be essential. As a result, multicomponent therapies have become increasingly the norm, but even these cannot be said to be achieving spectacular success in improving performance.

CHAPTER FOUR

TREATMENT OF TEST ANXIOUS CHILDREN

4.1 INTRODUCTION

Treatment of test-anxious children has lagged far behind that of test-anxious adults. S.B. Sarason and colleagues did not themselves undertake any treatment of the children they studied in the years 1960-1965, and while there has been considerable activity in experimental work with test anxiety in children in the years since, attempts to develop therapeutic programmes are few. For the most part, outcome studies in children have utilized systematic desensitization, but since the mid-70's cognitive approaches have been introduced. No comprehensive review of test anxiety management in children exists. References to a few studies employing systematic desensitization for test anxiety may be found in a review of applications of desensitization procedures for school-related problems (Prout & Harvey, 1978), and others are mentioned as part of a more general review of fear reduction techniques in children by Ollendick (1979), while Wells & Vitulano (1984) touch upon the subject while dealing with anxiety disorders in childhood. Because of the general paucity of studies in this field, a computer search of the literature was undertaken. Even so, few relevant studies were found.

4.2 EMOTIONALITY-BASED APPROACHES

The first systematic desensitization study in test-anxious children was undertaken by Kondas (1967), who attempted the reduction of fear of examinations and stage fright in 23 children from the fifth to ninth grades. Subjects were identified as high-anxious by their teachers and by self-report on the Fear Survey Schedule (Wolpe & Lang, 1964). Subjects were assigned to one of four groups, (1) relaxation training alone over 10 sessions; (2) systematic desensitization over 12 sessions; (3) presentation of the hierarchy items without relaxation over 4 sessions; (4) no-treatment control. Relaxation was by Schultz's autogenic training. The systematic desensitization group reported the most anxiety reduction, which was durable over a five-month period. The relaxation-only group reported a moderate reduction of anxiety, but this proved to be transient, while no changes were reported for the hierarchy-only group. Unfortunately, the differences in number of sessions confounds these results, and no attention-placebo group was included to control for non-specific effects. No performance measures were obtained in the study.

Mann & Rosenthal (1969) compared the efficacy of direct and vicarious desensitization in test-anxious seventh graders, in response to the perceived need for preventive and remedial programmes for schoolchildren. Their intention was that by combining principles of vicarious learning with systematic desensitization, large numbers of test-anxious students could be treated effectively with limited expenditure of therapist time.

All their subjects were referred by school counsellors after they had been counselled on at least one occasion for test anxiety. Fifty subjects in grade 7 served as experimental subjects, while 21 subjects in grade 8 served as controls (this to forestall parental criticism anticipated by school authorities had some members of a given class been by-passed). Two measures of test anxiety were used, a modified version of the adult Test Anxiety Scale (TAS), and the Gates-McGinnitie Reading Test (GM). Experimental subjects showed higher initial test anxiety, and obtained lower reading scores than control subjects, therefore analyses of covariance were subsequently performed to control for initial between-group differences.

Experimental subjects were assigned by stratified random sampling to one of two subgroups in each of five experimental conditions: (1) individual direct desensitization; (2) individual vicarious desensitization; (3) group direct desensitization; (4) vicarious group desensitization, observing direct desensitization of a group; (5) vicarious group desensitization, observing direct desensitization of a peer model. Two therapists, widely divergent in personal characteristics, undertook counterbalanced subgroups across each treatment condition.

Within-group data revealed that pooled experimental subjects exhibited a highly significant decrease in test anxiety after treatment, while no such change was found in the control group. On the reading test, while experimental subjects failed to demonstrate a significant improvement, the

control group worsened significantly. Between - group differences for pooled subjects showed strong treatment effects: experimental subjects displayed significantly less test anxiety and significantly better reading performance than controls at posttest. There was no significant therapist effect, nor was there any significant sex effect although, as is usually the case, females displayed higher TAS scores. Investigation of the relative effectiveness of the various treatment conditions revealed that there were no significant differences in outcome between the five conditions, all five significantly reducing self-reported test anxiety and improving performance on the reading test relative to controls.

Surprisingly, the vicarious groups improved no less than, and even tended to surpass, the direct groups in magnitude of improvement.

This otherwise well-designed study unfortunately failed to include an attention-placebo control, and did not provide follow-up data, nor data indicating what effects, if any, treatment had on general academic performance, which would have been of considerable interest. Furthermore, the fact that controls were taken from another grade introduces potential confounding variables such as possible lack of equivalency of the reading test for the different grades, and, as the grade examinations were imminent, different levels of apprehension concerning them.

Mann (1972) followed up the above with a further study, this time using videotaped treatment, with the intention of clarifying the contribution of various components of vicarious systematic desensitization to treatment outcome. Thus, he compared vicarious desensitization plus practice,

vicarious desensitization only, observation of model without relaxation, and a wait-list control. Subjects were eighty seventh and eighth grade students, selected from a pool of 110 students who had been referred by counsellors because of reported anxiety associated with school tests. On the basis of their scores on the TAS, they were assigned by random stratified sampling to one of the four treatment conditions. One half of each experimental group received instructions designed to maximize expectations for benefit, the other half received instructions designed to engender moderate expectations. Treatment consisted of 6 45-minute periods conducted semi-weekly.

At posttest immediately following treatment, and at follow-up five weeks later, within-group differences and between-group differences had become apparent, showing a significant decline in self-reported test anxiety in experimental subjects while control subjects showed a non-significant decrease. Performance results demonstrated that scores of both experimental and control subjects declined on the second form of the Gates-McGinnitie Reading Test; however, while this decline was non-significant for pooled experimental subjects, controls exhibited a substantial and significant decrement. In Mann's opinion, these results suggest that Form 2 of this test is more difficult than Form 1 (used at pretest), an opinion he based on three factors: (1) earlier findings (Mann & Rosenthal, 1969) where experimental subjects' performance on Form 2 increased to a negligible amount while that of controls declined significantly; (2) the statistical equivalence of control and experimental groups at pre-treatment; (3) the experimental subjects'

significant improvement on Form 3 at follow-up. Between-group analyses among experimental groups revealed no effect of the three procedural variations, nor of high-versus-medium expectations for benefit. All procedures resulted in approximately equivalent improvement, and when the control group received the same treatment as Group 1 between posttest and follow-up, they, too, exhibited the same pattern of improvement. These impressive results were, according to Mann, attributable to the robustness of vicarious desensitization.

Less apparent success was experienced by Laxer, Quarter, Kooman and Walker (1969), who compared relaxation training, systematic desensitization and no-treatment in high school students from 4 schools, dividing the experiment into two sections. Study A included students in grades 9-12; Study B, students in grade 13. Subjects were selected on the basis of high debilitating anxiety and low facilitating anxiety scores on the AAS (Alpert & Haber, 1960), together with a grade average that was less than B but high enough to allow some hope of passing the year. Additional measures used in the study were the Taylor Manifest Anxiety Scale (Taylor, 1953), and grade-point average. Treatment was administered by 4 specially-trained graduates with teaching experience, one to each school, during daily 20-minute sessions in small groups of 2 to 4 subjects over a six week period. Data from the four schools was pooled for purposes of analysis. The results showed that only relaxation training was reasonably effective in grades 9-12 in reducing general anxiety, Academic work was not altered significantly. For subjects in grade 13, there was a consistently positive change in the three anxiety criteria and the

academic criterion, although significance was not reached, due possibly to the small number of subjects (15 in total).

In a similar, improved, programme shortly afterwards, Laxer and Walker (1970) refined the subject sample, employed standardized achievement tests and included the simulation of exam situations. This time they compared systematic desensitization, relaxation training, exposure to mock examinations, combined exposure and relaxation, attention placebo and no treatment. Self-reported test anxiety was reduced only by the relaxation training and systematic desensitization conditions, which the authors considered to support the hypothesis that at least some of the beneficial effects produced by systematic desensitization can be attributed to the generalized effects of relaxation training. None of the treatments brought about an improvement in academic achievement. It is, however, arguably more difficult to bring about improvement in grade average or standardized achievement tests than in reading test performance, such as used by Mann & Rosenthal (1969) or Mann (1972) as a criterion of performance increment.

Charles Bugg, an elementary school counsellor in the American School in Darmstadt, Germany, reported in 1972 that modified systematic desensitization was a technique worth trying in a school setting with "counselees whose success and development are hampered by test anxiety and fear of public speaking" (1972:823). His modification of systematic desensitization involved teaching it as a technique in non-technical language on a one-to-one basis over one or two half-hour sessions, subsequently to be applied by the counsellee at every opportunity in both

imagination and reality. Bugg stressed the need for constant practice. He gave case-histories of three children, a seventh grade boy who was successfully desensitized of test anxiety in maths tests; a girl in second grade who was enabled to work on the board before the class without her customary fear, and a boy in ninth grade who who was cured of his speech anxiety. An interesting aspect of these case-histories is that all three children are described as hard workers with good natural ability who were strongly motivated to change, and in this Bugg may have pin-pointed the qualities necessary for success.

Deffenbacher & Kemper (1974a) found that group desensitization with junior high school students improved grade-point averages relative to a control group. They then repeated the procedure with elementary school students of the sixth grade in the same year (Deffenbacher & Kemper, 1974b). In the latter study the problem of test anxiety and the nature and availability of desensitization were described to a large group of sixth graders. Twenty-one students who considered themselves to be highly test anxious and who received their parents' consent were randomly assigned to either the desensitization group or the no-treatment control group. No formal measures of test anxiety were obtained. Treatment took place during the school term over seven sessions of 45 minutes each. The sole criterion for improvement was change in grade-point average, computed for each student by subtracting the first-term GPA (pre-counselling) from the second-term GPA (post-counselling). Results were very favourable, with students who received desensitization gaining .42 grade points, a significant improvement over controls, who gained only .02 grade points. Those

students who were failing in the two groups (5 in each) showed the same pattern to an even greater degree, with those who received desensitization improving an average of .53 grade points compared to the failing controls who lost an average of .03 grade points.

These results are unusual in demonstrating clear-cut gains in grade-point average, a relatively "remote" performance measure, as a presumed result of systematic desensitization. It would seem to be unwise, however, to make this presumption without data indicating that experimental and control subjects were equivalent in intellectual ability. IQ data is important because although IQ scores are probably contaminated to some degree by high levels of test anxiety, they nevertheless give an indication of a child's potential to show academic improvement once the condition is alleviated. In their small sample, Deffenbacher & Kemper might have done better to match subjects on level of IQ, rather than rely on random allocation to groups to control for this variable. Evidence of equivalence in self-reported test anxiety is also of considerable importance, and is lacking in this study.

Barabasz (1973) investigated the effects of group desensitization on measures of autonomic arousal and performance on a group IQ test in fifth- and sixth-grade students. It is an unusual study in that subjects were selected solely on the basis of their galvanic skin response to an audiotape of 15 stimulus situations, 14 of which were neutral or pleasant, while the 15th was designed to arouse test anxiety. Thirty-seven students in whom this final situation aroused a significant

reaction were designated high-test-anxious, while the remainder ($n = 46$) were designated low-test-anxious. A pre-treatment criterion of performance was obtained by administering the Lorge-Thorndike Intelligence Test to all students in their classrooms via video-taped instructions under conditions of mild threat, namely that results would be placed on their permanent record cards.

The two experimental groups consisted of sixth graders and fifth graders respectively, comprising subgroups of high- and low-test anxious children in each. They were exposed to a systematic desensitization programme in their regular homeroom settings on five consecutive days. The first two days stressed only relaxation training, with introduction of a test anxiety hierarchy (constructed by the E) over the remaining three days. The control group consisted on one sixth grade and one fifth grade consisting of high-and low-test-anxious children who were not exposed to any treatment. Upon termination of treatment, the second form of the Lorge-Thorndike Intelligence Test was administered to experimental and control groups with the same mild threat. All subjects were then re-examined by polygraph.

Barabasz reported that post-testing on both measures yielded results indicating efficacy of treatment. High-test-anxious subjects exposed to desensitization had significantly lower GSR scores and significantly improved IQ test scores, than high-test-anxious controls. No significant changes were found in criterion scores in experimental low-test-anxious subjects relative to control low-test-anxious subjects, a useful

indication that desensitization did not appear to impair motivation in this subgroup while reducing autonomic arousal in the high-anxious subgroup.

Barabasz (1975) went on to replicate this study, but this time used classroom teachers as paraprofessional therapists. Subjects were pupils in the fifth-, sixth-, and seventh-grades, who were again divided into high-and low-test-anxious on the basis of their autonomic response to 16 visualized situations (inclusion of an additional item designed to arouse test anxiety). In place of an IQ test, the pre-treatment performance measure was the reading comprehension subtest Form A of the California Achievement Test. Three experimental groups of both high and low test anxious students (one from each of the fifth, sixth, and seventh grades), were exposed to the desensitization programme via videotape, with their homeroom teachers as facilitators, in their regular homerooms on five consecutive days. Similarly constituted control groups were not exposed to any treatment. Posttesting was conducted on the polygraph and Form B of the reading test.

Results were again reported as indicating that desensitization significantly lowered the GSR scores of the test-anxious subgroup of experimental subjects but not of the low-anxious subgroup. No significant differences were found for controls. At each grade level, reading comprehension subtest scores indicated significant improvement on the part of high-test-anxious experimental subjects, but not for high-anxious controls or experimental or control low-anxious subjects.

The basic assumption underlying the Barabasz studies is that test anxious students display higher levels of autonomic arousal. Yet, as has been discussed, in recent years there has been considerable evidence that high-test-anxious individuals, as defined by self-report, do not display measurably higher levels of autonomic arousal than low-test-anxious individuals, although their subjective experience leads them to think they do. It is unfortunate that a measure such as the TASC, which is quick and easy to administer, was not included in these studies to add to information regarding the relationship between self-report and physiological measures. As it is, perhaps some, and possibly even several, of the subjects who were high-arousal would not have been high in self-reported test anxiety.

Alternatively, it is possible that pupils displaying high arousal were a subgroup of test-anxious high-achievers; similar to the subgroup of high-test-anxious, high-achieving college students described by Galassi, Frierson and Sharer (1981). These authors investigated the behaviour of high, moderate and low test anxious college students during an actual test situation and found that high-achieving students who scored high on a test anxiety measure also reported a high number of bodily sensations throughout the test. As Barabasz gave neither pre- nor posttest subgroup performance data means in either study, it is impossible to know within which IQ or reading ability ranges the children fell, or whether subgroups were roughly equivalent in pretest performance. Possibly high autonomic arousal is associated with high natural ability, giving rise to a subgroup

which obtains particular benefit from desensitization, going from good to better performance after intervention. Without mean data one can only speculate that this may account for the obtained results.

It would also have been of interest had GSR readings been obtained during the actual test-taking situation in addition to those obtained during the visualized situations. Such data would have been informative as to the relationship between arousal in real-life and imagined situations.

The final study to be reviewed under this heading utilizes a different form of counterconditioning, that of pairing pictures of classroom scenes with positive words with the aim of establishing an association between them. Conducted by Parish, Buntman & Buntman (1976), this study randomly assigned 75 children from the fifth and sixth grades to one of three groups: 23 to the experimental group, where they were given four treatment sessions over eight days of 40 presentations of slides of neutral words followed by pictures of school-related scenes, then by positive words; 26 to the placebo group where exactly the same procedure was followed except that no positive words were presented; and 26 to a no-treatment control group. Experimental and control group children were given the rationale that they were being given training in spelling, and were naive as to the true purpose of the procedures. Immediately following the final session of treatment procedures, children in all three groups were tested on both the Vocabulary and Digit Span of the Wechsler Intelligence Test for Children (1949). The choice of these subtests was based on the suggestion that performance on the Digit Span subtest is affected by anxiety level

made by Hodges & Spielberger (1968) and Rappaport, Gill & Schafer (1945), while that on the Vocabulary subtest is not (Rappaport, Gill & Schafer, 1945).

Results indicated that the Experimental group scored significantly more than the other two groups on the Digit Span subtest, whereas performance was equivalent on the Vocabulary subtest. The authors interpret these results as indicating that their counterconditioning intervention served to reduce test anxiety, and hence improve Digit Span performance. They considered their findings lent support to the notion that Digit Span performance is indeed affected by level of anxiety in spite of discrepant findings, such as those obtained by Guertin, Ladd, Frank, Rabin & Hiester (1966) in adults.

Discrepant findings were also obtained by the author in a recent study (Baddeley, 1984), in children of the same grade as Parish's subjects, and therefore of direct relevance. This study compared the performance of 28 high- and 27 low-test-anxious children on the Wechsler Individual Scale for Children-Revised (1974). Testing was conducted by a researcher blind to the children's anxiety status. No difference was found between the two groups on the Digit Span, Vocabulary, Picture Arrangement, Picture Completion, Object Assembly and Coding subtests, but low-test-anxious subjects scored significantly higher than high-test-anxious subjects on Similarities, Arithmetic and Comprehension ($p < .05$); Block Design ($p < .01$), and Information ($p < .001$). Although the Digit Span subtest of the WISC (1949) differs somewhat in administration and scoring from that of the

WISC-R (1974), necessitating a degree of caution in comparing performance on the two, these findings would appear to indicate that Parish et al. might have overestimated the efficacy of their counterconditioning procedure. It was a relatively weak intervention, and as has become apparent in the review of the literature, performance increments in test anxious individuals are difficult to obtain. The posttest-only design does not preclude the more obvious explanation that group differences after intervention were in fact due to differences between the groups prior to intervention. While there are obvious difficulties to pre-testing on the same IQ measure, nevertheless it might have been preferable to pretest on Digit Span and an alternate form of Vocabulary, with the aim of forming comparable groups across which practice effects would remain constant.

4.3 COGNITIVE APPROACHES

Only three studies in the literature have utilised cognitive approaches in treating test anxious children. The first of these, conducted by Warren, Deffenbacher & Brading in 1976, attempted to reduce the worry component of test anxiety. In the analysis of test anxiety, Rational Emotive Theory holds that anxiety stems from one or more irrational self-statements and that by focusing directly on changing these distorted, irrational beliefs the client is helped to challenge self-depreciating ruminations and to substitute rational, task-oriented self-instructions in their place.

Thirty-six fifth and sixth graders whose TASC scores fell in the upper 28th percentile were randomly assigned, within the constraints of balancing sex and grade, to either RET treatment or no-treatment control. RET subjects were split into two groups of nine each and met for seven half-hour periods, held in irregular fashion due to various commitments, over a 5-week interval.

Treatment effects were assessed by (1) readministration of the TASC, (2) post-treatment completion of the General Anxiety Scale for Children (Sarason et al., 1960), and (3) post-treatment performance on the Addison-Wesley Arithmetic Performance Test. Both groups demonstrated a significant reduction in test anxiety, although the RET group's reduction was significantly greater. No differences between groups were found on the post-test only measures of general anxiety and performance.

In interpreting these results the following factors are relevant. The arithmetic test was originally designed for students completing the sixth grade, with most students finishing in approximately 25 to 30 minutes, whereas the younger population in this study were given only 15 minutes to complete. Thus the difficulty level was high, and group means for both RET and controls were low. The experimenters concluded that this difficulty may have meant that "anxiety variables had little chance to operate", or that possibly the task may have been perceived as irrelevant, thus not arousing anxiety in either group. A more probable explanation, however, is that both groups became equally anxious in this

situation and thus no difference in performance was evident. It would have been of interest to know how low-test-anxious children - who did not write the test - would have fared had they written it under those conditions. It is even possible that had the TASC been administered the day after, and not the day before, the Arithmetic Performance Test, there might have not have been a post-test reduction in test anxiety in either the RET or the control groups.

The authors of this study concluded that their findings supported the applicability of RET as a treatment for test anxiety in elementary school settings, in which conclusion they expressed strengthened confidence by virtue of the relative inexperience of the therapist, the short duration of therapy, the irregular sessions, and the improvement of the control group which made it "more difficult to show a significant treatment-related change"(1976:28). However, these factors could lead one to suspect the opposite: that RET in this instance was not effective in bringing about the reduction in test anxiety. It would appear to be more probable that non-specific treatment effects such as participation in therapy and expectancies generated by treatment were responsible. As the study failed to include an attention-placebo control group it is not possible to determine the validity of this alternative conclusion.

In a carefully-designed study which controlled for non-specific treatment effects, Rasskind & Nagle (1980) examined modeling effects on the intelligence test performance of test anxious children. They reasoned that if pre-test exposure to a rewarding evaluative session via videotape

significantly raised WISC-R scores of disadvantaged minority group children compared to those who had no vicarious experience (Piersel, Brody, & Kratochwill, 1977), and if observation of a filmed model significantly improved scores on an individual IQ test and reduced self-reported anxiety in college students (Jaffe & Carlson, 1972), then use of a similar videotape with highly test-anxious children might be of equal benefit to them. Such a treatment would have the advantage of being economical and easy to administer.

To test their hypothesis, they gave all fifth graders in two schools serving a white, middle-class area, the Otis-Lennon Mental Ability Test (OLMAT) and TASC in group sessions. Students who scored in the normal intelligence range (OLMAT IQ 80-119) were retained in the sample. Those children scoring in the lowest quartile of TASC scores were considered low-test-anxious, those in the highest quartile were considered high-test-anxious, with the remainder being considered as middle-test-anxious. Twenty-four children from each of the first two categories and 48 from the last category were randomly selected and assigned to one of three treatment groups. The placebo-attention Control group saw an unrelated film prior to taking the WISC-R; the Observation group saw a film depicting an anxious boy and girl taking a simulated WISC-R with a supportive examiner; the Coping group saw the same film, except that the supportive examiner discussed the children's anxiety and provided coping techniques for doing well on the test. All child models expressed anxiety initially, but gradually verbalized confidence in their performance, following the mastery model procedure (Meichenbaum, 1971).

The films depicted white boys and girls in a school situation with a white woman as examiner, thus duplicating the children's own experience. After viewing the appropriate film, subjects in each group were individually tested on a short-form of the WISC-R by a white woman examiner who was blind as to the child's group assignment. No post-test was conducted on the TASC. This is a particularly interesting study as all subjects, at each level of anxiety, received some form of "treatment" and presumably were given no clue as to their anxiety categorization.

The WISC-R Full Scale IQ scores were subjected to a 3 (anxiety level) x 3 (treatment) x 2 (sex) analysis of covariance, with the OLMAT IQ score serving as the covariate. Results indicated that there were no significant main effects nor interactions. Thus, none of the children, whatever their level of anxiety, obtained beneficial effects from observing the modeling film. The authors concluded that the lack of effect in this study, which differs from the findings reported by Piersel et al (1977), may be due to differences in subject characteristics such as class and intellectual ability (the mean IQ level in this study was 10 points higher than in Piersel et al.'s study). Thus, while vicarious exposure to a test-taking situation might be a beneficial pretest experience for culturally deprived children who are high-test-anxious and deficient in test-taking skills, it might not bring about improvement in non culturally deprived, test-anxious children. The authors also put forward an alternate possibility: that vicarious pretest experiences are not a powerful treatment for lowering self-reported anxiety nor for preventing the usual performance decrement associated with high test anxiety. They suggested that previously reported

positive results might have been due to inadequate experimental controls such as examiner bias, lack of a placebo group, and failure to randomly select, as well as randomly assign subjects to experimental groups. In support of this latter possibility, the authors referred to Bandura's (1977) statement that treatment based on vicarious experiences is less effective than personal mastery experiences.

It would appear that both explanations might apply, the intervention being too weak to allay anxiety sufficient to improve performance in high-test-anxious children, and, as simple IQ test-taking practice, unnecessary in this presumably test-wise population of relatively privileged children.

The third study to use a cognitively-based procedure to alleviate the performance decrements associated with high test anxiety was conducted by Ribordy, Tracy & Bernotes (1981). Subjects were 48 elementary schoolchildren selected as high or low test anxious from grades 4,5 and 6 on the basis of their TASC scores. They were then randomly assigned within the constraints of grade level and sex to one of three groups: attentional training, placebo training and no-training control. The two training groups were given a single individualized training session by a female experimenter who was unaware of the hypotheses under investigation. The attentional training group was rewarded for successful inhibition of irrelevant responses and correct attending behaviour on a task similar to the Stroop Color Word Test. The placebo training group experienced the same training task but received non-contingent rewards.

Post-training testing was conducted by a second female experimenter who was blind as to which condition a child belonged. The criterion task was performance on the Stroop Colour Word Test (Stroop, 1935, cited in Jensen & Rohwer, 1966), with the Central Incident Task (Hagen, 1967) to assess generalization effects immediately following.

Stroop test results indicated that for younger subjects, attentional training enabled high test anxious children to perform as well as low test anxious children, whereas in the placebo and control groups high test anxious children made more errors than low test-anxious children. This did not occur in older subjects. The central-incident learning task yielded non-significant results for all conditions. The authors considered that their results indicate that attentional training is therefore of only limited value for preventing the impairment of performance in high test-anxious children. They suggested that the increase in test anxiety which they and others have found over the elementary school years may require more extensive training before it is alleviated. They also suggested, based on Little & Jackson's (1974) findings, that combining attentional training with relaxation training in older children might be more successful.

4.4 DISCUSSION

Apparent from this review is the difficulty in drawing conclusions about treatment effects. Results are inconsistent, but as such variety exists in methods of measurement, modes of intervention, and subject characteristics, it is almost impossible to compare findings. However, it is possible to draw attention to deficiencies which may account for the inconsistent findings.

One of the more puzzling deficiencies of the above studies is what Allen (1980) dubs "mono-method specificity". Four of the fourteen (29%) measured only one "domain". Thus, Kondas (1967) measured only self-reported anxiety; Deffenbacher and Kemper (1974 a and b) used only a performance measure: grade-point average; Parish, Buntman & Buntman (1976) used only posttest IQ subtests. Yet, as discussed under measurement issues (see Chapter 2), test anxiety is a complex hypothetical construct and assessment of treatment effectiveness necessitates multiple methods of measurement. While it may be disputed that physiological assessment is necessarily relevant in view of the evidence cited earlier, it does appear that both self-report and performance measures are essential.

In the Barabasz (1973; 1975) studies, subjects were categorised as high or low test-anxious on the basis of level of physiological responding only, and improvement was quantified in terms of a performance measure. Ribordy, Tracy & Bernotas pre-tested on test anxiety but post-tested on a performance measure only. In view of the relative ease with which TASC

scores may be obtained, and its ubiquitousness in experimental approaches, it is difficult to understand why this measure was used so little in treatment approaches. Also lacking in the majority of studies was follow-up data.

Failure to consider subject characteristics with greater care is a shortcoming in the majority of the above studies, but especially where numbers of subjects were small, such as Deffenbacher & Kemper's two studies. Randomization is considered to be the most economical procedure for canceling out potential biases that might systematically affect outcome (Campbell & Stanley, 1963), yet when subjects are few in number, matching on relevant variables would have ensured equivalence. Only two studies (Mann & Rosenthal, 1969; Mann, 1972) wisely ensured pre-test equivalence of test anxiety level by means of stratified random sampling, and in no study was any consideration given to the effect of intellectual ability, surely of relevance where performance measures are the criteria of improvement. Bugg (1972), alone, mentioned the ability of the children he worked with, but his paper is anecdotal rather than experimental, lacking as it does any formal measures or controls.

It has been well-documented in recent years that non-specific treatment effects, such as positive expectancies and other theoretically non-functional procedures within a therapeutic context, lead to anxiety reduction (e.g. Allen, 1971; Dawley & Wenrich, 1973; Guidry & Randolph, 1974). An effective way of controlling such effects is to include a placebo-attention group in which subjects receive all the accoutrements of

treatment save for the active ingredients that supposedly are essential for therapeutic change, i.e. they receive a pseudotreatment (Kazdin, 1980). Yet, as Allen (1980) similarly found in a review of treatment in adults, failure to include such a group was the single most frequent threat to internal validity in these studies. Attention-placebo groups were included in only four studies (29%), Laxer & Walker (1970), Parish, Buntman & Buntman (1976), Rasskind & Nagle (1980) and Ribordy, Tracy & Bernotas (1981). From these dates, it is apparent that attention-placebo groups are more readily included in recent studies. Of these four studies, three reported no, or little, effect of treatment on performance, while the third, Parish, Buntman & Buntman (1976) failed to preselect children for anxiety level, or match for intellectual ability, although performance on two WISC-R subtests was their criterion of effectiveness of treatment.

No-treatment control groups in most studies were correctly drawn from volunteers, as nonvolunteers are likely to be less motivated and less anxious (Allen, 1972). However, this gives rise to a curious phenomenon : such subjects invariably fail to show the spontaneous improvement that nontreated nonparticipants do when repeatedly assessed on a self-report anxiety measure. This appears to result from an interaction between pretest sensitization and resentment at receiving less desirable treatment and has been called "resentful demoralization" by Cook & Campbell (1976). Subjects on a wait-list control are presumably even more likely to show no posttest improvement as they have to manifest anxiety as a prerequisite for participation in forthcoming treatment. Such non-improvement in

control subjects leads to an inflated posttest between-group difference, and hence a misleading impression of the efficacy of treatment.

Prout & Harvey, writing in 1978, reported that the research in school-age subjects contained several examples of performance increments as a result of desensitization procedures. Yet analysis of these studies has revealed shortcomings that render positive results somewhat suspect. Absent from the child test-anxiety literature are multi-component packages which are currently showing promise with adults; possibly less equivocal results might result from their use. Also conspicuously absent is any attempt to alter the context of the test-anxious child either at school or at home.

PART TWO

THE PRESENT PROJECT

CHAPTER FIVE

INTRODUCTION

5.1 RATIONALE

In Part 1, evidence was reviewed which indicated that a high level of test anxiety in children is related to a constellation of factors which are of concern to educators, parents and clinicians, auguring poorly for the satisfactory development of cognitive skills, and the sense of industry and self-efficacy considered to be crucial for later satisfactory life adjustment.

Test-anxious elementary schoolchildren may already be, or run the risk of becoming, "decelerators", the term used by Anastasi (1976) with reference to children whose IQ scores showed a decline over time, indicating that they were developing at a slower rate than the standardization sample. Such a downward trend in performance places in jeopardy subsequent educational and career opportunities.

Even where a test-anxious child's performance is above-average, there may be negative long-term consequences. For example, it is not unreasonable to assume that many of the children who lack the necessary skills to reduce evaluation-related stress to manageable levels, have a high probability of becoming adults who experience the stressors of everyday

life as unpleasant, harmful, or even disabling, with attendant risks to their psychological and physical well-being. Strumpfer (1983) reviews the consequences of such "dystress", listing its short-term effects as emotional and cognitive strain, fatigue, exhaustion, hypertension, substance abuse, low satisfaction with job, career and life in general, and disturbed marital and family relations; and longer-term effects as "burnout" and the physical "diseases of adaptation" such as duodenal ulcers, and coronary heart disease.

Accordingly, the goals of test anxiety treatment would be to bring about positive changes in the short-term, medium-term, and long-term. Thus, in the short-term, treatment would aim to lower levels of test anxiety and improve self-concept and academic performance (or at least halt any tendency towards deceleration); in the medium term, carry-over effects would, hopefully, continue the improvement, facilitating school performance to the individual's full potential; and in the long-term, the skills learnt would enable effective coping with stress at any stage of life.

In the review of the treatment literature, presented earlier, the most promising treatment for the reduction of high levels of test anxiety, and bringing about of performance gains, emerged as multicomponent in nature, which is in keeping with the complex view of test anxiety presented by Meichenbaum (1980). Treatment "packages", incorporating emotionality reduction, cognitive restructuring and study skills components have been successfully used with adults, but no such development has been documented

in the child treatment literature to date. Yet the multicomponent approach would appear to hold similar promise for the younger age group. In addition, the review of the literature suggested that treatment of test-anxious children should also take cognisance of the role played by situational factors in eliciting, maintaining and reinforcing the test anxious response, an approach not hitherto utilised in this field.

The present project was therefore undertaken with the aim of developing a multicomponent group treatment programme for test-anxious elementary schoolchildren within the school system. The components of the basic treatment package were firstly, self-control systematic desensitization (Goldfried, 1971); secondly, cognitive restructuring, using the procedures developed by Meichenbaum and Genest (1977) to alert subjects to the role that anxiety-provoking thoughts have in the development and maintenance of test anxiety, and to substitute positive, coping, self-statements in their place, and thirdly, informal study-skills training was undertaken, based on Robinson (1970). Application of training in real-life test situations was included. Group treatment was chosen both for reasons of economy and because it was considered that there were advantages to the group situation: children would not feel singled out, and would have the opportunity to deal with a common problem, giving and receiving help from their peers.

The core multicomponent programme was compared with an expanded treatment package, which added "contextual" components for teachers and parents

designed to increase their knowledge of test anxiety and alert them to factors of the school and home which might be eliciting and maintaining it, with the aim of instigating positive changes. In terms of the author's model of the development of test anxiety, such "contextual" components were considered to be an essential supplement to the treatment of test-anxious children themselves, possibly leading to more reliably-obtained performance increments.

In light of the discussion regarding control groups in the previous chapter (see pages 87 and 88), two control conditions were incorporated: an attention-placebo condition to control for non-specific treatment effects, and a non-identified no-treatment control condition to avoid "resentful demoralisation" or the need to "earn" future treatment.

The original intention was to balance the four conditions across two primary schools serving a white, middle-class, English-speaking population, at which the researcher had conducted previous studies. However, as will be detailed shortly under Method, it proved impossible to do so adequately due to the exigencies of conducting therapy groups within school time (an important theoretical requirement). A decision was therefore taken to conduct two studies, one in each school, with two conditions per school: at the first school, the expanded, contextualized, programme was compared with the no-treatment control, and at the second school the core programme for children only was compared with the placebo condition.

This compromise, while not allowing direct comparison of data, nevertheless produced studies which complemented one another. A third complementary

In order to have more chance of wider future application should it prove successful, all treatments were designed to be cost effective in terms of equipment, setting and professional time expenditure. Group treatment was chosen both for reasons of economy and because it was considered that there were advantages to the group situation, enabling participants to deal with common problems and not feel singled out.

In addition to the empirical study, it was the intention to explore, during therapy, the children's subjective perceptions of stressful factors, and by thus rounding out the research data, gain a more detailed profile of the test-anxious child, which to date has been lacking.

5.2 INFORMAL STATEMENT OF THE RESEARCH HYPOTHESES

It was hypothesised that the clearest improvement in treated subjects relative to controls, in terms of reductions in test anxiety, gains in self-concept and performance improvements, would occur in Studies 1 and 3 where the "contextualised" programme was compared with a non-identified, no-treatment control. No between-group differences were expected in Study 2, where the core programme was compared with an attention-placebo control, both of which were expected to lead to some reductions in test anxiety and gains in self-concept, but no concomitant improvement in performance.

CHAPTER SIX

METHOD

6.1 SUBJECTS

6.1.1 Subject Pools

The subjects in Study 1 were drawn from a pool of 81 Standard 4 pupils of a co-educational elementary school in a white, middle-class suburb in Cape Town in 1985, while the subjects in Studies 2 and 3 were drawn from pools of 65 and 62 Standard 4 pupils in a comparable school in a similar suburb in Cape Town in 1985 and 1986. There were seven Standard 4 classes altogether, three in Study 1 and two each in Studies 2 and 3. The only exclusion criteria were that English had to be the home language, children had to be present for administration of pretesting i.e. no late administrations were made, and that they were not presently receiving formal treatment at school.

The choice of white, largely middle-class, children was made on the basis that the vast majority of reported studies concerning test anxious schoolchildren have focused on children in a westernized context, with whom South African children in the "white" education system may be compared directly. This would not be true of "coloured", "indian" and "black" South African children, whose experience of schooling is within

education systems which differ widely in such factors as size of class, teacher competence, methods of teaching, and where political turmoil has added acute stresses of a different nature to evaluation anxiety. Such factors would render comparison invalid.

Selection of Standard 4 pupils was made for earlier research projects undertaken by the author (Baddeley, 1982, 1984), and continued for this, on the basis that, by this grade, a negative correlation between test anxiety and performance measures has been found to exist. Also, results of formal IQ and achievement testing are available.

6.1.2 Subject Selection

High-test-anxious subjects are usually thus designated on the basis of falling in the top quartile of the test anxiety distribution in the group to which they belong. In this study, a decision had to be reached in the initial planning as to which top quartile to use:

- (a) the top quartile of the combined pool of all
Standard 4 pupils at a school
or
- (b) the top quartiles of each of the Standard 4
classes at a school

In order to control for teacher effects, it was decided to select the second option (subject to approval of school personnel) and divide the resultant subjects into therapy and control groups, balanced across classes.

Upon discussion with school personnel it became apparent, however, that this "ideal" method of subject allocation would be impossible, because the only school periods that subjects were permitted to miss were non-examination subjects, such as art, needlework or handwork, which each class had at different times. Thus, as children were to be treated within school time (an important theoretical requirement), a different method of allocation to groups was sought.

The chosen solution was to have one therapy group and one control group per class, which in turn meant increasing the number of subjects from each class as otherwise groups might have been too small to allow optimum group functioning (classes ranged in size from 24 to 34, which would have given 6 to 8 test-anxious subjects per class, and only 3 or 4 per therapy group). It was therefore decided to include as subjects all children in each Standard 4 class who scored above that class's mean on the measure of test anxiety. This resulted in the inclusion of children of whom it might be argued that they did not need treatment, not being "high-test-anxious" as commonly defined. However, any cut-off point is arbitrary, and this more inclusive grouping provided an opportunity to observe what differences existed between children in the top quartile on the TASC and those who obtained less extreme, but still relatively high,

scores on that instrument. The inclusion of more children from each class also did much to avoid any "stigmatizing" of subjects in therapy groups, particularly as it resulted in more "high status" children being included, a factor that made treatment more attractive to other children and their parents.

The numbers of children who qualified for inclusion on this basis were 12 of 28, 16 of 29, 13 of 24, 12 of 32, and 14 of 34 pupils respectively in 1985, and 12 of 33 and 12 of 29 in 1986. In the situations where there was an uneven number who qualified for inclusion, selection of the final subject took place randomly from among those with the lowest qualifying score.

6.1.3 Subject Allocation to Groups

Pretest equivalence in group means in test anxiety was considered to be of particular importance due to the inclusion of more than just the top quartile of scorers. With small numbers, random allocation could well have resulted in experimental and control groups which differed widely in terms of mean anxiety. Pretest equivalence in the variable of self-concept was also of importance as there are good theoretical grounds for assuming that children who are test anxious yet have a good opinion of themselves differ in many ways from those who are test anxious and have a poor self-concept. Matching on sex was also important as high-test-anxious boys appear to

manifest more deleterious effects of test anxiety than high-test-anxious girls (Ruebush, 1963).

Assignment of subjects to experimental or control groups was therefore carried out in accordance with the method of stratified random sampling as used by Mann (1972). Subjects from each class were stratified in terms of test anxiety and self-concept scores and were then randomly assigned to one of two groups, which in turn were randomly designated either an experimental or control group. A research assistant carried out this task as the researcher was to conduct therapy, and therefore wished to remain blind as to the children's levels of pretest test anxiety and self-concept.

This method yielded the following groups:

Study 1 : School A (1985)

(Full contextualised treatment programme)

Experimental 1	: 20 subjects (8 boys, 12 girls)	:	3 groups
Control 1	: 20 subjects (8 boys, 12 girls)	:	3 groups

Study 2 : School B (1985)

(Treatment programme for children only)

Experimental 2	: 13 subjects (4 boys, 9 girls)	:	2 groups
Attention-Placebo	: 13 subjects (4 boys, 9 girls)	:	2 groups

Study 3 : School B (1986)

(As Study 1, slightly modified)

Experimental 3	: 12 subjects (4 boys, 8 girls)	:	2 groups
Control 3	: 12 subjects (4 boys, 8 girls)	:	2 groups

All experimental and attention-placebo subjects participated with their parents' approval. Approval of parents of non-identified controls could not, for obvious reasons, be sought in any way other than a general agreement to their children's participation in class testing for research purposes.

The ratio of girls to boys was consistent with the trend, as revealed in the literature, for girls to be more test-anxious than boys. It has been suggested by Hill and S.Sarason (1966) that socialization practices may account for this difference. Boys in our culture are taught that they should not exhibit feminine traits, and may therefore consider it to be socially unacceptable to admit to test anxiety although they may experience it as much as girls. As mentioned above, those boys who do admit to high levels of test anxiety appear to show more predictable interfering effects than girls with similar levels (Ruebush, 1963), therefore, one of the areas of interest in this study was to determine whether there was a differential rate of improvement in high-test-anxious boy and girl subjects on the dependent variables.

6.2 INSTRUMENTATION

6.2.1 The Test Anxiety Scale for Children (TASC)

(S.Sarason et al. 1960)

See Appendix A for full copy of test (no copyright)

6.2.1.1 Description

The TASC is a group-administered paper and pencil test consisting of 30 items to which a child responds by circling the appropriate answer on an answer sheet as the Experimenter reads the questions. The items were selected to be consistent with Freud's (1949) definition of anxiety as a conscious unpleasant experience, but are limited to reactions to evaluative and test-like situations. Twelve of the items specifically mention the word "test"; others ask about "worry" over classroom performance. The anxiety score is the number of "yes" responses. Acquiescence response set was investigated by Feld and Lewis (1969), who concluded that it did not appear to be a major source of variance.

While defensive distortion may be a problem with the TASC as with other self-report instruments (highly defensive children tend to admit to less anxiety), this is of relevance primarily when a study involves selection of low-test-anxious as well as high test-anxious subjects, in which event the Defensiveness Scale for Children (S.Sarason et al. 1964),

included in any subscale. Feld and Lewis chose this simple scoring device because it might be easily applied to other data. they reported that a system of this type had been shown to yield fairly comparable results to that estimated by a least-squared regression of the actual factor scores onto the observable data (Horn, 1965). The items included in each subscale are given in Appendix B, along with the means and standard deviations of their total sample. It should be noted that item 31, listed under the

Remote School Concern factor, is not part of the original TASC, but was

added by Feld and Lewis and was not included in the present project.

The four subscale scores were positively intercorrelated (.32 to .65), which the authors considered to be typical when a simplified scoring technique is used to estimate factor scores. They concluded that in part, these correlations represent item overlap, but that this in itself would

not entirely account for the positive relationships and that they indicate that the subscales do not accurately reflect the orthogonal factors from which they were derived. Nevertheless, they considered that these measures of the factors yielded certain interesting sex and race results that were not simple duplications of the results using the total score.

For example, in their sample, girls scored significantly higher than boys on the Remote School Concern, Somatic Signs of Anxiety and Test Anxiety subscales, although only the first two subscales showed sizable independent contributions to a significant discriminant between the sexes.

All four subscales showed a significant race effect, indicating higher anxiety in Black children, with Remote School Concerns and Poor Self-Evaluation, in that order of importance, making sizable independent

6.2.2.1 Description

This is a pen-and-pencil, self-report instrument, administered in a group setting. It was designed for research into the development of children's self-attitudes and correlates of these attitudes. The "self-concept" as assessed by this instrument is in accord with the phenomenological approach, and is assumed to refer to a set of relatively stable self-attitudes (Piers, 1977). It consists of 80 declarative sentences worded at the Standard 3 reading level. Examples include "I am dumb at most things" and "I can be trusted", and are both descriptive and evaluative. The child answers "yes" or "no" according to how he generally feels. Items are scored in a positive or negative direction according to a favourable self-concept, a high score indicating a positive self-concept. In the normative sample of 1138 children the mean was 51.84 with a standard deviation of 13.87.

6.2.2.2 Reliability

Early reported test-retest coefficients were over .70 (Piers & Harris, 1969), regarded as satisfactory for research purposes by Wylie (1974). These were confirmed by subsequent temporal stability estimates up to 5 months, while shorter periods, utilized more frequently for reliability purposes, showed test-retest correlations of .80 or over (Piers, 1976). Changes in group means on a retest (up to 5 points) were found to be consistently in the direction of a higher score (more positive self-concept) even if no treatment or manipulations have taken place (Piers & Harris, 1969). Internal consistency data reported by Piers (1976) confirmed a general alpha of about .90.

6.2.2.3 Validity

An attempt was made at the outset to build content validity into the scale by basing items on all Jersild's (1952) categories of qualities children liked or disliked about themselves. During item analyses, when non-discriminant items were dropped, the retained items reflected an emphasis on Jersild's last two categories, "Just me, myself" and "Personality, character, inner resources, emotional tendencies" which presumably reflect a child's general self-concept better than the more narrow categories.

Piers & Harris (1969) argue that, from a phenomenological perspective, construct validity does not depend on correspondence of the self concept with ratings by others. Nevertheless they concede that establishing the degree of agreement between the two furnishes useful information. Where this has been attempted, appreciable correlations of .43 and .31 between self rating on the Piers-Harris and teacher and peer ratings of socially effective behaviour have been obtained (Cox, 1966, in Piers & Harris, 1969), and a correlation coefficient of .54 between the scale and teacher ratings was obtained in a normal group of fourth and fifth grade children (Querry, 1970, in Piers, 1976)

With respect to convergent validity with other self-concept instruments, Mayer (1965) reported a correlation of .68 between the Piers-Harris Scale and Lipsitt's Children's Self-Concept Scale for a sample of special education students while Schauer (1975) obtained a correlation coefficient

of .85 for 215 fifth and sixth grade students comparing it with the Coopersmith Self-Esteem Inventory. Comparisons with scales designed for older and younger age-groups yielded yielded smaller correlations.

Correlations of the Piers-Harris with measures of intelligence and achievement show considerable variation, ranging from zero to the .50's, with achievement generally correlating higher than IQ (Piers, 1976).

6.2.2.4 Factor Analysis

Initially a principal components factor analysis was reported for 457 sixth graders. Ten factors were extracted and rotated, with six factors finally being interpreted. These were Behaviour, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction. These factors wer confirmed by Michael, Smith and Michael (1969). However, the Piers-Harris has for the most part been used in terms of a total score, as was the case in the present study.

In relation to faking and social desirability, the authors of the scale concluded that rather than deliberately attempting to mislead, children's responses may reflect a confusion between how they really feel and act, and how they have been told they should feel and act. They consider that children are less knowledgeable about secondary gains than adults, and that therefore low scores on the scale reflect truly low self-esteem and should be taken seriously.

6.2.3 NEW SOUTH AFRICAN GROUP TEST FOR CHILDREN (NSAGT)
(National Bureau for Educational and Social Research, 1969)
No copy included because of the nature of the test.

6.2.3.1 Description

This is a group intelligence test designed for screening use in white pupils, with three levels:

Junior	(ages 8 - 11 years)	2 forms
Intermediate	(ages 10 - 14 years 11 months)	1 form
Senior	(ages 13 - 17 years 11 months)	2 forms

As children in the studies were tested in Standard 4, not in Standard 3 as in previous years, some were administered the Intermediate level, while the majority were administered the Junior level by the school psychologists in their areas.

Each series of the NSAGT consists of Nonverbal and Verbal tests as follows:

Nonverbal		Verbal	
Test 1:	Number series	Test 2:	Classification of pairs of words
Test 3:	Figure Analogies	Test 4:	Verbal Reasoning
Test 5:	Pattern Completion	Test 6:	Analogies of Words

There are 30 items in each test, the first five of which serve as practice examples. Each item is of the multiple choice type with a set of 5 possible answers. The test yields Verbal, Non-verbal and Total IQ scores for each child.

The test was standardised in 1964 on a sample representing all white pupils in South Africa. At the Junior level, the sample was constituted of 2923 Afrikaans speaking and 1525 English-speaking children. The following controls were applied:

- 1 A control for the ratio of Afrikaans to English-speaking pupils (2:1)
- 2 Geographic location : taking account of the size of school populations, pupils in White schools (provincial, private and provincial-aided) in all four provinces and South West Africa were used in the sample
- 3 Urban-rural distribution was controlled.
- 4 Physically and mentally handicapped children were omitted.
- 5 Random sampling of ten pupils for each age group in the school was instituted.

Norms were calculated independently for the two language groups. The test has a mean of 100 and a standard deviation of 15. the standard error of measurement is reported to be 2,5 IQ points for the Junior series and 3.0 for the Intermediate series.

6.2.3.2 Reliability and Validity

The reliability of the test calculated by means of the K-R21 formula for verbal, non-verbal and total scores ranges from .89 to .96 for both groups in the Junior series. Validity in predicting school success is shown by a correlation of .86 and .81 respectively for the junior verbal and non-verbal scores with a Silent Reading Test. Reliability and validity for the other levels of the NSAGT are equally satisfactory. The requirement of the NSAGT that the child be able to read, may result in the confounding of reading ability and intelligence.

Verbal, Non-verbal and Total scores were obtained from school records for all subjects in the study.

6.2.4 Academic Achievement

Academic achievement was calculated as a deviation score obtained by dividing each subject's examination percentage by the mean percentage obtained in that examination by all children in Standard 4 at that school.

Example:	Subject's percentage:	56
	Standard 4 average percentage:	59
	56 divided by 59	.95

This score reflects performance in all examination subjects, which in Standard 4 are: English, Afrikaans, Mathematics, History, Geography, General Science and Hygeine.

6.3 PROCEDURES PRIOR TO TREATMENT

6.3.1 Pre-Testing

Pre-testing was carried out at the schools on consecutive days in the fifth week of the first term of the school year when it was considered that the children would have settled reasonably well into their new classes. The Test Anxiety Scale for Children (TASC) and the Piers-Harris Self-Concept Scale for Children were administered, in that order, in the classroom by the researcher, a procedure lasting approximately 40 minutes. Teachers were not present. Testing was conducted between the commencement of school and mid-morning break so that tested children had no opportunity to disclose test content to untested children.

Children were told that the purpose of the questionnaires was to find out how they thought and felt, and that there were no right or wrong answers. They were assured that their answers would be held in confidence.

At the same time, teachers at School A (1985) were given Pupil Assessment Forms (see Appendix C) in which each pupil was assessed in terms of what percentage the teacher expected of him or her in the end of the year examinations. There were three categories : over 70% (High-Expectancy); between 60-69% (Medium-Expectancy), and below 60% (Low-Expectancy).

6.3.2 Scoring of Questionnaires & Selection of Subjects

All scoring of questionnaires and selection of subjects was performed in such a way as to conceal identities until the experimental groups had been formed (the researcher continued to remain blind to the actual scores of subjects on the TASC, Piers-Harris, IQ and Achievement until treatment was completed to control for expectation effects).

The Teacher Assessment Forms were returned to a research assistant who compiled from them in random order a list for each class of those high-test-anxious children who would receive treatment (E1 subjects) and a matched number of High Expectancy pupils. This list was then given to the researcher as the basis for classroom observations.

Because at each school, teachers were going to be away on leave during the second term, with obvious consequences for the research project, it was decided to split treatment into two intakes, the first taking place in the second term (April/May) for those subjects whose teachers were not on leave, and the second following in the third term (August/September) for those whose class teachers had, by then, returned. In order to maintain equal numbers of subjects in the two intakes at School A (which had three Standard 4 classes) as a control for extraneous variables, it was necessary to split the subjects from the third Standard 4 class into two treatment groups of 4 subjects each, one receiving treatment in April/May and the other in August/September.

6.3.3 Observation in Classrooms (School A only)

The researcher spent a day in each of the three Standard 4 classes, observing and recording teacher-pupil interactions for the listed pupils. Teachers were told that the researcher was interested in observing the way test-anxious children behaved in the classroom, but were not told which those children were, and were also not aware that they, too, were under observation.

Categories for observing and recording interactions and coding distinctions were taken in slightly shortened form from the Dyadic System proposed by Good and Brophy (1970,1971) and arranged in four cycles for greater ease of application (See Appendix D for Specimen Coding Sheets).

CYCLE B : WORK-RELATED CONTACTS:

These included all occasions in which the teacher was interacting with an individual pupil about classwork or homework. They were coded as to whether they were initiated by teacher or child, and what response was made by the teacher (praise, criticism, process or product feedback).

CYCLE C : BEHAVIOURAL CONTACTS:

These were coded whenever the teacher singled out a child for praise, criticism or warning regarding classroom behaviour.

CYCLE D : PROCEDURAL CONTACTS:

These included all dyadic interactions which did not fit into the above categories and were mostly concerned with everyday classroom maintenance such as asking children to perform errands etc. and were coded as to whether they were teacher- or child-initiated and whether they were met with praise or criticism.

6.3.4 Individual Interviews with Subjects

The researcher met individually for 30 to 40 minutes (during schooltime in an empty classroom) with all subjects selected for treatment groups and the attention-placebo group, at which meeting the nature of test anxiety was discussed, and their participation in a six-week treatment programme the

following term invited. All expressed interest. The interviews included the obtaining of biographical data, observation of timed performance on the Block Design subtest of the WISC-R, followed by a discussion of cognitions during the task and during schoolwork in general. The purpose was two-fold: to establish a degree of individual rapport before commencement of groups, and to obtain data upon which to base subsequent groupwork.

A letter of invitation to attend the Parents' Course (to be held concurrently with the children's programme) was sent to the parents of each of the experimental subjects in Study 1.

6.4 OVERVIEW OF TREATMENT AND CONTROL PROCEDURES

(Session by session details of the multicomponent treatment package, attention-placebo course, and parents' course are to be found in Appendices E,F,G)

6.4.1 Treatment procedures in Study 1

6.4.1.1 Procedure A: Intervention with Children

This multicomponent programme extended over six weeks, with hourly sessions at weekly intervals during the school morning in lieu of woodwork, needlework or art, and included self-control desensitization, cognitive

instead they were encouraged to employ coping skills to regain the state of relaxation. The cognitive component aimed at teaching them to identify when they were producing negative self-statements, catastrophizing, and being task-irrelevant; what situational cues triggered off these negative cognitions and attentional deficits; and to replace them with more constructive, positive cognitions that redirected attention to the task on hand (Meichenbaum & Genest, 1977).

Study skills counselling was informal, loosely based on Robinson (1970); children were encouraged to identify factors which might be interfering with effective studying, and instigate changes.

6.4.1.2 Procedure B: Intervention with Parents

The project aimed to involve Study 1 parents in their children's treatment programme by means of 3 two-hour experiential group sessions held at weekly intervals in the school staffroom in the evenings, which both mothers and fathers were encouraged to attend. The focus of these sessions was the nature and effects of test anxiety, exploration of parent-child interactions that might be perpetuating or increasing test anxiety, and practical ways of improving communication and of providing structured times for homework and relaxation. It was considered that the group situation would be beneficial, promoting discussion, belongingness, and a joint search for solutions to a common problem.

6.4.1.3 Procedure C : Intervention with Teachers

The original intention to hold similar structured groups for teachers was not possible due to time constraints on the part of the teachers. Thus, intervention with teachers was far less than desired. Education on the nature and effects of test anxiety and classroom practices which perpetuated or increased it, and ways whereby it might be ameliorated, were discussed informally whenever the opportunity arose. In addition, the researcher was invited to address the Parent-Teacher Association on the subject, and as it was a condition at the school that staff were obliged to attend these meetings, they were all exposed to some formal input on test anxiety. Feedback of a constructive nature on the basis of the earlier recorded classroom interactions was given at individual interviews, each lasting for the length of a free period (20 minutes).

6.4.2 Control Procedure in Study 1

Control subjects were not identified in any way to teachers, nor did they themselves know that they were serving as controls. Their pre-testing and post-testing was accomplished unobtrusively at the same time as that of the rest of their classmates.

6.4.3 Treatment procedure in Study 2

Procedure A was administered over the same 6-week period as in Study 1.

There were no interventions with parents or teachers

6.4.4 Control Procedure in Study 2

This programme was identical with the treatment procedure in regard to duration and situation, but differed in session content. This took the form of self-concept enhancement exercises drawn in part from a programme designed by Harper (1978) with his consent, and in part from a text by Canfield and Wells (1976). A self-concept enhancement programme was considered to be a weak, but plausible intervention for test anxiety, with any reductions in test anxiety which resulted arguably being due to non-specific effects such as expectancy of improvement and attention. Harper found that no improvement in self-concept or academic achievement in underachieving elementary schoolchildren resulted from his programme, a finding which paralleled results obtained in other studies using similar programmes (as reviewed by Scheirer & Kraut, 1979). From an ethical viewpoint, the programme was planned to be enjoyable for the children, and any effects were anticipated to be benign.

6.4.5 Treatment procedures in Study 3

Procedures were very similar to those of Study 1, but took place in the setting of School B, not School A, and contained certain modifications to Procedures A and B in an attempt to improve effectiveness, while Procedure C became still weaker as a result of the impossibility of conducting systematic teacher observation and personalised feedback.

6.4.5.1 Modifications to Procedure A

- * a taped version of progressive relaxation exercises was issued to each subject in this condition with instructions to practice at home.
- * the desensitization procedure was made closer to Wolpe's systematic desensitization in that imagined scenes were terminated whenever subjects signaled a disruption in their state of relaxation, and not restarted until relaxation had been regained (used by Deffenbacher & Kemper, 1984).
- * the hierarchy used with success by Deffenbacher & Kemper (1974) was used instead of one reached in group discussion.

6.4.5.2 Modifications to Procedure B

The content of the parents training course was slightly altered to include explication of stress and its management, but remained basically the same.

Again, however, three evening group sessions, each two hours in length, were held at weekly intervals at the school.

6.4.5.3 Weakening of Procedure C

While it was intended to conduct classroom observation and give feedback to teachers as in Study 1, this proved impossible as various school activities were taking place early in the year. By the time it would have been possible, identification of experimental group subjects had occurred. In an attempt to structure some teacher intervention, the author offered to run a stress management programme for all staff, at which discussion on test anxiety could have been included, but such was the difficulty of finding a time suited to all, that the project was shelved. Contact with teachers was on the whole informal, although, as at School A, the researcher was invited to address a Parent-Teacher Association meeting which staff were obliged to attend. Some unstructured classroom observation was undertaken to obtain a general impression of classroom interactions.

6.4.6 Control procedure in Study 3

This was identical with that of Study 1.

Note: All treatments in each study were carried out by the author except that in the parents' course of Study 1 she was assisted by a senior

teacher of a private school with many years experience of lay counselling, and in the parents' course of Study 3 she was assisted by an Intern Educational Psychologist.

TABLE 6.1 : SUMMARY CHART OF PROCEDURES IN STUDIES 1, 2 AND 3

Procedure	STUDY 1		STUDY 2		STUDY 3	
	Exp	Control	Exp	A-P	Exp	Control
Procedure A (children)	X		X		X	
Procedure B (parents)	X				X	
Procedure C (teachers)	X				X	
Attention-Placebo Control Procedure				X		
No-treatment Control Procedure		X				X

6.5 POST-TESTING PROCEDURES

Post-testing was conducted on the Test Anxiety Scale for Children and the Piers-Harris Self-concept Scale for Children six weeks after completion of treatment. All Standard 4 pupils were tested in their classrooms by the researcher, as for pre-testing, which allowed unobtrusive collection of control data. Normalised percentages were obtained for the end-of-year Standard 4 and Standard 5 examinations.

CHAPTER SEVEN

DESIGN OF THE STUDIES

7.1. DESIGN CONSIDERATIONS

The chosen research design for each of the three studies was the pretest-posttest control group design (Kazdin, 1980). This consists of a minimum of two groups, one of which receives treatment and the other does not.

The essential feature of the design is that subjects are tested before and after intervention, and the amount of change from pre- to post-intervention reflects the effect of the intervention. Subjects are assigned randomly to groups either before or after completion of pretesting (in the present case, after). In diagrammatic form:

O	R	X	O
O	R		O

(where R denotes random assignment, O denotes an assessment or observation, and X the intervention)

Kazdin (1980) notes that this design enjoys the widest use in clinical research for a variety of reasons. One of the most important is that by pre-testing and post-testing at the same time for both groups, it controls for the usual threats to internal validity, such as history, maturation, repeated

testing and instrumentation. Also, random assignment ensures that group differences are not a function of selection bias or regression. The pretest is of importance in that it permits equalisation of groups on different variables by block matching or stratified random sampling. Where there are sufficient subjects, the effect of different levels of performance on the pretest can be used as a separate variable in the design. The pretest also allows degree of change to be assessed both for the group and for individual subjects, and provides information on the relative severity of the problem before intervention, which may prove to be of predictive value in terms of benefits gained.

No design is free of disadvantages, however, and the researcher who uses this design must be aware of its main restriction, which lies in the administration of the pretest itself. While repeated administration of a test is controlled in this design, the possibility of the pretest having a sensitizing effect and rendering the treatment effective because of this, is not controlled. While this does not present a threat to the internal validity of a study, it does mean that the results can only be generalised to subjects who receive a pretest. The time between assessment and intervention appears to be relevant in determining whether sensitization will occur: the further they are apart, or the more unrelated they are in the perceptions of the subject, the less likely it is that sensitization will happen. However, if too great a time elapses between, then there is the danger that intervening events and maturation will obscure the treatment effects.

7.2 THE DESIGN, FACTORS AND HYPOTHESES OF STUDY 1

The aim of Study 1 was to test the effect of a contextualised treatment programme on test anxiety, academic achievement and self-concept in 20 high-test-anxious subjects, half of whom were treated in April/May and the other half treated in August/September, compared with a non-treated, non-identified control group of 20 test-anxious peers. This was achieved by means of a 2 x 2 x 2 factorial design, with repeated measures on Factor C, for test anxiety and self-concept, and a 2 x 2 x 3 design, with repeated measures on Factor C, for academic achievement. The factors and hypotheses follow.

FACTORS OF STUDY 1

FACTOR A : Intake for Treatment

A1: Intake	1	(April/May)
A2: Intake	2	(August/Sept)

FACTOR B : Treatment Condition

B1: Experimental	1	(E1)
B2: Control	1	(C1)

FACTOR C : Time of Testing

C1: Pretest
C2: Posttest
C3: Posttest 2 (Achievement only)

DEPENDENT VARIABLES:

1. Scores on the Test Anxiety Scale for Children
2. Normalised examination scores for Stds 3,4 and 5
3. Scores on the Piers-Harris Self-concept Scale for Children

HYPOTHESES OF STUDY 1

Between-group:		Test Anxiety		Achievement		Self-concept	
		Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
HO		E1 = C1	E1 = C1	E1 = C1	E1 = C1	E1 = C1	E1 = C1
HE		E1 = C1	E1 < C1	E1 = C1	E1 > C1	E1 = C1	E1 > C1

Within-group:		Test Anxiety		Achievement		Self-concept	
		E1	C1	E1	C1	E1	C1
HO		Pre = Post	Pre = Post	Pre = Post	Pre = Post	Pre = Post	Pre = Post
HE		Pre > Post	Pre = Post	Pre < Post	Pre = Post	Pre < Post	Pre = Post

Thus, it was hypothesised that reductions in test anxiety, and gains in self-concept and achievement would occur only in treated subjects, leading to significant between-group differences at posttest. No differences were hypothesized as a result of intake for treatment, which was incorporated as a factor into the design as a method of control.

7.3 THE DESIGN, FACTORS AND HYPOTHESES OF STUDY 2

The aim of Study 2 was to test the effect of a non-contextualised treatment programme on test anxiety, academic achievement and self-concept in an experimental group of 13 test-anxious Standard 4 pupils (E2), six of whom were treated in April/May and the balance treated in August/September, compared with an attention-placebo control group of 13 test-anxious peers (A-P). This was achieved by a 2 x 2 x 2 factorial design for test anxiety and

self-concept and a 2 x 2 x 3 factorial design for academic achievement, both with repeated measures on Factor C. The factors and hypotheses follow.

FACTORS OF STUDY 2

FACTOR A : Intake for Treatment

- | | | |
|------------|---|---------------|
| A1: Intake | 1 | (April/May) |
| A2: Intake | 2 | (August/Sept) |

FACTOR B : Treatment Condition

- | | |
|-----------------------|-------|
| B1: Experimental 2 | (E2) |
| B2: Attention-Placebo | (A-P) |

FACTOR C : Time of Testing

- C1: Pretest
- C2: Posttest
- C3: Posttest 2 (Achievement only)

DEPENDENT VARIABLES:

1. Scores on the Test Anxiety Scale for Children
2. Normalised examination scores for Stds 3,4 and 5
3. Scores on the Piers-Harris Self-concept Scale for Children

HYPOTHESES OF STUDY 2

Between-group:

	Test Anxiety		Achievement		Self-concept	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
HO	E2=A-P	E2=A-P	E2=A-P	E2=A-P	E2=A-P	E2=A-P
HE	E2=A-P	E2=A-P	E2=A-P	E2=A-P	E2=A-P	E2=A-P

Within-group

	Test Anxiety		Achievement		Self-concept	
	E2	A-P	E2	A-P	E2	A-P
HO	Pre=Post	Pre=Post	Pre=Post	Pre=Post	Pre=Post	Pre=Post
HE	Pre>Post	Pre>Post	Pre=Post	Pre=Post	Pre<Post	Pre<Post

As the both the core treatment and attention-placebo programmes were expected to lead to some reductions in test anxiety and gains in self-concept, leading to significant within-group differences at posttest, no significant between-group differences were expected. Neither programme was expected to have a significant effect upon the resistant measure of academic performance. No differences were hypothesised as a result of intake for treatment.

7.4 THE DESIGN, FACTORS AND HYPOTHESES OF STUDY 3

The aim of Study 3 was to test the effect of an "improved" contextualised treatment programme on test-anxiety, achievement and self-concept in 12 test-anxious Standard 4 pupils, half of whom came from Class A (those with above-average mathematical aptitude) and half from Class B (those with below-average mathematical aptitude), compared with 12 non-identified controls from the same classes. Again, a $2 \times 2 \times 2$ factorial design, with repeated measures on C, was used for test anxiety and self-concept, and a $2 \times 2 \times 3$ factorial design, with repeated measures on C, was used for academic achievement. Factors and hypotheses follow.

FACTORS OF STUDY 3

FACTOR A : Class Membership

- A1: Class A (above-average mathematical aptitude)
 A2: Class B (below-average mathematical aptitude)

FACTOR B : Treatment Condition

- B1: Experimental 3 (E3)
 B2: Control 3 (C3)

FACTOR C : Time of Testing

- C1: Pretest
 C2: Posttest
 C3: Posttest 2 (Achievement only)

DEPENDENT VARIABLES:

1. Scores on Amended Test Anxiety Scale for Children (TASC)
2. Standardised Examination Scores
3. Scores on Piers-Harris Children's Self-concept Scale

HYPOTHESES OF STUDY 3

Between-group (combined classes)

	Test Anxiety		Achievement		Self-concept	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
HO	E3 = C3	E3 = C3	E3 = C3	E3 = C3	E3 = C3	E3 = C3
HE	E3 = C3	E3 < C3	E3 = C3	E3 > C3	E3 = C3	E3 > C3

Within-group (combined classes)

	Test Anxiety		Achievement		Self-concept	
	E3	C3	E3	C3	E3	C3
HO	Pre = Post	Pre = Post	Pre = Post	Pre = Post	Pre = Post	Pre = Post
HE	Pre > Post	Pre = Post	Pre < Post	Pre = Post	Pre < Post	Pre = Post

COMPARED CLASSES

Test Anxiety

Pretest

HO	AE3 =	AC3 =	BE3 =	BC3
HE	AE3 =	AC3 <	BE3 =	BC3

Posttest:

HO	AE3 =	AC3 =	BE3 =	BC3
HE	AE3 <	AC3 =	BE3 <	BC3

Achievement & Self-concept

Pretest

HO	AE3 =	AC3 =	BE3 =	BC3
HE	AE3 =	AC3 >	BE3 =	BC3

Posttest:

HO	AE3 =	AC3 =	BE3 =	BC3
HE	AE3 >	AC3 =	BE3 >	BC3

Key:

E3 Subjects receiving contextualised intervention

C3 Non-identified, non-treated controls

AE3 Class A E3 subjects

AC3 Class A C3 subjects

BE3 Class B E3 subjects

BC3 Class B C3 subjects

Thus, when classes were compared, it was hypothesised that experimental and control subjects from Class A would have significantly lower test anxiety, higher achievement and higher self-concept scores at pretest than experimental and control subjects from Class B.

The effect of treatment was predicted as follows: by posttest, all treated subjects were expected to show a significant within-group reduction in test anxiety, with gains in achievement and self-concept. No such change was expected in controls. Thus, it was additionally hypothesised that initial differences between control subjects in Class A and experimental subjects in Class B would fall away by posttest.

7.5 STATISTICAL PROCEDURES

Univariate analyses of variance with repeated measures were the statistical methods of choice for analysing the three dependent variables of test anxiety, self-concept and academic achievement, as they offered a method of determining both the within-group and between-group effects of treatment, and also permitted the incorporation, as factors, of the time of year that treatment occurred in Studies 1 and 2, and streamed class membership in Study 3. The use of analysis of variance in test anxiety outcome research was recommended by Allen (1980). In this field, it has been a fairly common procedure to use Analysis of Covariance, with the pretest score as the covariate. This is entirely appropriate where the pretest score is regarded as an extraneous source of variation, that is, where initial differences between groups have not been controlled for by matching or stratified random sampling. It is not necessary where experimental and control groups are equivalent at pretest, as in Studies 1 and 2. Where groups were formed on the basis of streamed class membership as in Study 3, it was hypothesised that this would, in fact, yield groups differing markedly in pretest test anxiety, self-concept and achievement, and the question of interest was whether treatment would have different effects upon these groups, not to control for such differences (it should be noted that within each class, experimental and control groups were equivalent).

The Bonferroni method (Conger, 1984) of controlling Type 1 errors was employed (i.e. divide alpha, the Type 1 error rate, by the number of dependent measures which in this instance yielded a significance level of .016). This minimizes capitalization on chance differences, the risk of which increases markedly when computing several independent tests of significance (with three independent univariate tests, as is the case in each of these studies, the probability of at least one such error increases to .15) but increases the risk of Type 2 errors. As an attempt to overcome the latter problem, where use of the .05 level of significance would have resulted in a significant main effect or interaction, the additional analyses are continued in an appendix.

A univariate approach has more restrictive assumptions than a multivariate approach regarding the variances of the repeated measurements, but where they are met it has been considered to be more powerful especially in small samples (Davidson & Toporek, 1981). These restrictive assumptions concern the homogeneity of variances of differences which, if violated, can affect interpretation of the F-ratio, biasing it in a positive direction. This contrasts with completely randomised factorial designs where only severe violations of the assumptions of homogeneity of variance call for concern. These problems are, however, only applicable when the repeated factor consists of more than two levels. If there are only two levels of a repeated factor, there is only one variance of differences and obviously no problem of homogeneity (Keppel, 1982). Of the three dependent variables in these studies, only one, Achievement, had more than two levels, therefore Geisser-Greenhouse (1958) and Huynh-Feldt (1976) corrections were computed in analyses of this variable.

Hotelling's T-squared tests of the subscales of the TASC were subsequently undertaken to determine whether any of the subscales were especially sensitive to the effects of treatment. Finally, a series of two-way anovas were computed to test for differences on a number of variables between subjects designated "improved" and "non-improved" in level of test anxiety according to a specific criterion.

For all variables, assumptions of normality, homogeneity of variance, and independence were tested and met, using transformations where necessary. Full descriptive statistics are supplied in Appendix H. All data for analyses were interval data. BMDP (1985) statistical programmes were used for all analyses.

CHAPTER EIGHT
RESULTS

8.1 UNIVARIATE ANALYSES OF STUDY 1

8.1.1 Univariate Analysis of Test Anxiety: Study 1

TABLE 8.1 : TASC MEANS AND STANDARD DEVIATIONS (STUDY 1)

	A1B1 Exp/Apr	A1B2 Contr/Apr	A2B1 Exp/Aug	A2B2 Contr/Aug	C means
C1 (Pre)	19.80 (3.52)	19.2 (3.99)	17.5 (3.50)	17.10 (4.12)	18.40
C2 (Post)	11.5 (5.87)	15.5 (4.6)	13.2 (4.12)	14.7	13.73
	n=10	n=10	n=10	n=10	

TABLE 8.2 : TASC BC CELL MEANS (STUDY 1)

	C1	C2
B1	18.65	12.35
B2	18.15	15.1

Figure 1 : Bat C Cell Mean Profiles :
Test Anxiety (Study 1)

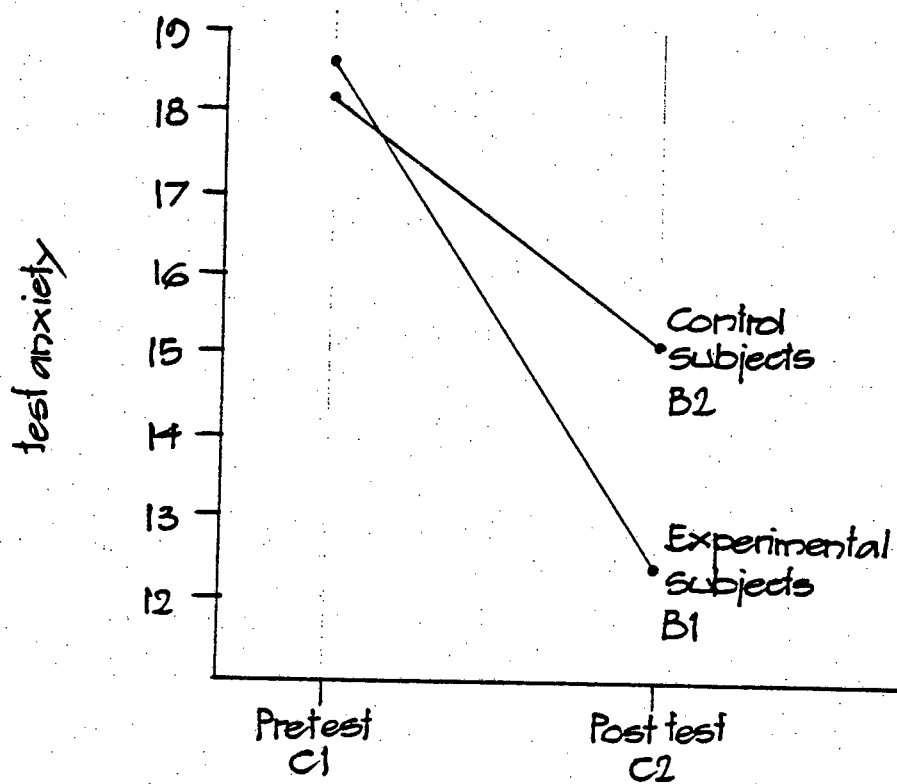


TABLE 8.3 : TASC ANOVA SUMMARY TABLE (STUDY 1)

SOURCE	SS	DF	MS	F
A (Time)	15.31	1	15.31	.47
B (Treatment)	25.31	1	25.31	.38
A x B	6.61	1	6.61	.20
ERROR	1175.95	36	32.67	
C (Pre-Post)	437.11	1	437.11	46.92 **
A x C	35.11	1	35.11	3.77
B x C	52.81	1	52.81	5.67 #
A x B x C	9.11	1	9.11	.98
ERROR	335.35	36	9.31	

= $p < .05$ accepted as trend only
 ** = $p < .016$ (Bonferroni's correction)

INTERPRETATION

There were no significant three-way or two-way interactions at the more stringent level of significance, indicating that the effects of one factor did not depend on the levels of the other two factors. There were also no significant A or B main effects, indicating that neither time of year that treatment and posttesting occurred, nor treatment condition, affected test anxiety to any significant degree. However, there was a significant C main effect ($p < .016$) with the marginal means indicating that all subjects combined showed a marked drop in test anxiety from 18.4 to 13.73.

The B x C interaction was significant at the uncorrected level of significance ($p < .05$); see Appendix I for continued analysis. Briefly, this indicated that the treated group showed a greater drop in test anxiety than the non-treated group, but that this was insufficient to manifest as a between-group difference.

8.1.2 Univariate Analysis of Achievement: Study 1

TABLE 8.4 : ACHIEVEMENT MEANS AND STANDARD DEVIATIONS (STUDY 1)

	A1B1 Exp/Apr	A1B2 Contr/Apr	A2B1 Exp/Aug	A2B2 Contr/Aug	C
C1 (Pre)	.936 (.09)	1.024 (.11)	.900 (.12)	1.019 (.14)	.967
C2 (Post1)	.908 (.12)	1.036 (.14)	.902 (.15)	.997 (.15)	.959
C3 (Post2)	.901 (.10)	1.018 (.14)	.890 (.15)	.983 (.17)	.946

TABLE 8.5 : ACHIEVEMENT: BC CELL MEANS (STUDY 1)

	C1	C2	C3
B1	.918	.905	.896
B2	1.022	1.017	1.003

Figure 2 : Bat C Cell Mean Profiles:
Achievement (Study 1)

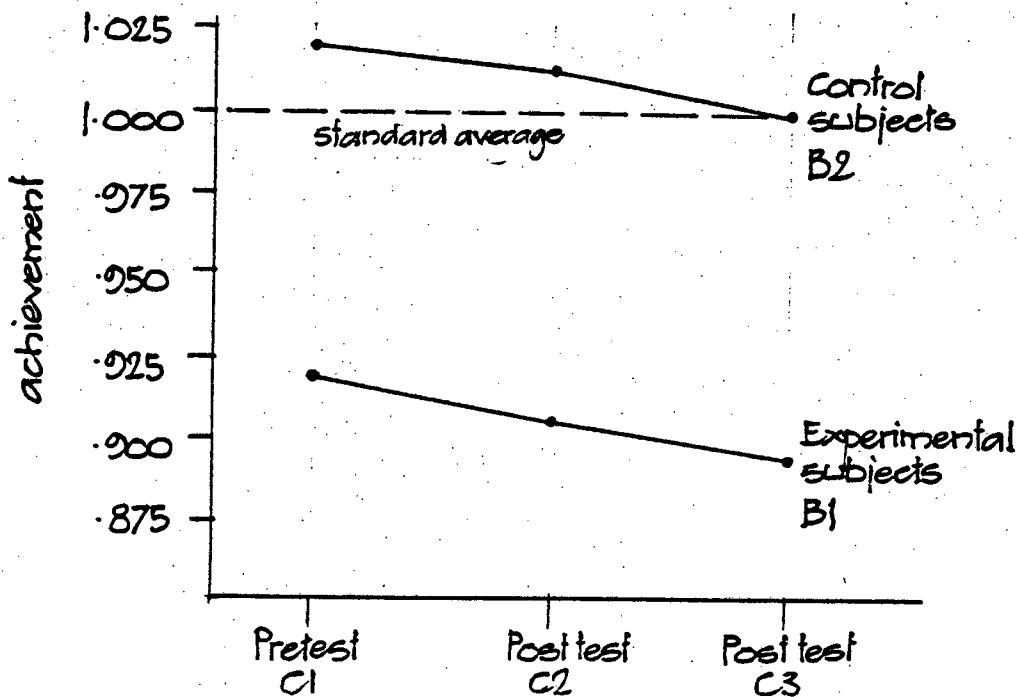


TABLE 8.6 : ACHIEVEMENT ANOVA SUMMARY TABLE (STUDY 1)

SOURCE	SS	DF	MS	F
A (Time)	.01	1	.01	.26
B (Treatment)	.31	1	.31	6.26 #
A x B	.00	1	.00	.01
ERROR	1.66	33	.05	
C (Pre-Post)	.01	2	.00	2.03
A x C	.00	2	.00	.01
B x C	.00	2	.00	.07
A x B x C	.01	2	.00	1.24
ERROR	.14	66	.00	

= $p < .05$ (trend only)

INTERPRETATION:

There were no significant three-factor nor two-factor interactions, nor were there significant main effects for factors A B or C, indicating that within-group academic achievement did not differ significantly between groups, nor did they vary significantly from year to year (Std's 3 to 5) for any group of subjects.

However, the B main effect showed significance at the uncorrected level ($p < .05$): control subjects achieving better than experimental subjects overall. Cell means revealed that this group achieved better than the treated group at pretest, a chance occurrence due to random allocation of subjects to groups. This difference was maintained at posttests 1 and 2.

Although not reaching significance, there was a decline in achievement in both groups over the post-testing period (see BC cell mean profile). This decline is so slight that it would not normally be mentioned; however, in view of the exceptionally stable nature of normalised examination results in the population surveyed, it appears to be worthy of consideration, particularly as if it were to continue over successive years the decline would then be considerable.

8.1.3 Univariate Analysis of Self Concept : Study 1

TABLE 8.7 : SELF-CONCEPT MEANS AND STANDARD DEVIATIONS (STUDY 1)

	A1B1 Exp/Apr.	A1B2 Contr/Apr	A2B1 Exp/Aug	A2B2 Contr/Aug	C means
C1 (Pre)	49.80 (13.06)	49.70 (13.22)	53.30 (10.91)	53.30 (9.78)	51.53
C2 (Post)	53.00 (13.06)	55.10 (14.38)	62.00 (9.25)	53.25 (8.99)	55.83

As the distribution was skewed, exponentiation transformations were performed on the data.

TABLE 8.8 : SELF-CONCEPT ANOVA SUMMARY TABLE : (STUDY 1)

SOURCE	SS	DF	MS	F
A (Time)	1912711.25	1	1912711.25	.90
B (Treatment)	804807.20	1	804807.20	.38
A x B	2035220.00	1	2035220.00	.96
ERROR	76426639.30	36	2122962.20	
C (Pre-post)	4307776.20	1	4307776.20	7.43 **
A x C	2163.20	1	2163.20	.00
B x C	638316.45	1	638316.45	1.10
A x B x C	2044801.25	1	2044801.25	3.53
ERROR	20880625.90	36	580017.39	

** = $p < .016$ (Bonferroni's correction)

TABLE 8.10 : BC MEANS (STUDY 2)

	C1	C2
B1	20.57	14.55
B2	19.69	15.22

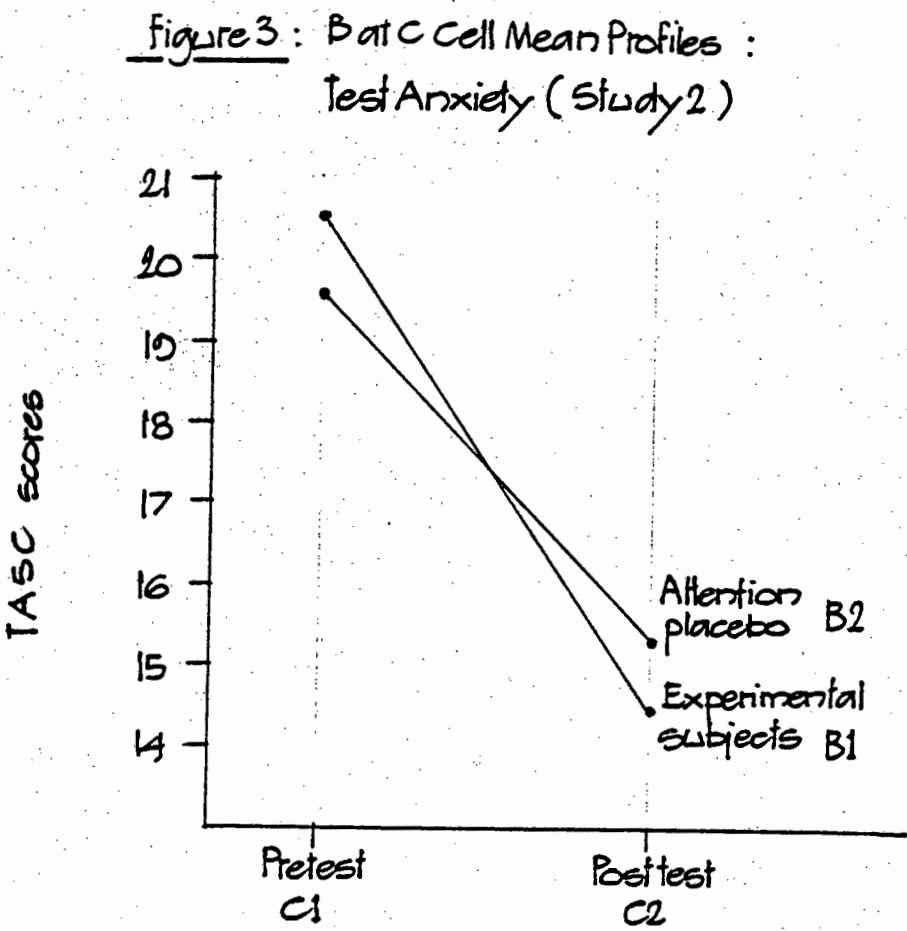


TABLE 8.11 : TASC ANOVA SUMMARY TABLE (STUDY 2)

SOURCE	SS	DF	MS	F
A	43.44	1	43.44	1.79
B	.89	1	.89	.04
A x B	2.12	1	2.12	.09
ERROR	533.52	22	24.25	
C	335.50	1	335.50	15.53 **
A x C	.73	1	.73	.03
B x C	4.95	1	4.95	.23
A x B x C	.03	1	.03	.00
ERROR	475.24	22	21.60	

** = $p < .016$ (Bonferroni's correction)

INTERPRETATION:

There was no significant ABC interaction, and there were no significant two-factor interactions. The main effect of Factor A was not significant, indicating the time of year that remediation and post-testing occurred had no effect. The main effect of Factor B was also not significant, indicating that there were no differences in reported test anxiety between Experimental 2 subjects and Attention-Placebo Controls. There was, however, a significant within-group (Factor C) main effect, indicating a substantial drop in test anxiety from pre- to posttesting in all subjects. Inspection of C means indicates this to have been from 20.19 to 15.12. The remediation programme thus showed no effect over and above the effects of attention and a programme which was not theoretically relevant.

8.2.2 Univariate Analysis of Academic Achievement : Study 2

TABLE 8.12 : ACHIEVEMENT MEANS AND STANDARD DEVIATIONS (STUDY 2)

	A1B1	A1B2	A2B1	A2B2	C means
C1	1.000 (.14)	1.022 (.21)	1.061 (.14)	.798 (.23)	.974
C2	.99 (.13)	1.047 (.23)	1.034 (.18)	.808 (.20)	.973
C3	.93 (.10)	1.008 (.29)	1.059 (.21)	.843 (.14)	.964

Figure 4 : Profile of C Means :
Achievement (Study 2)

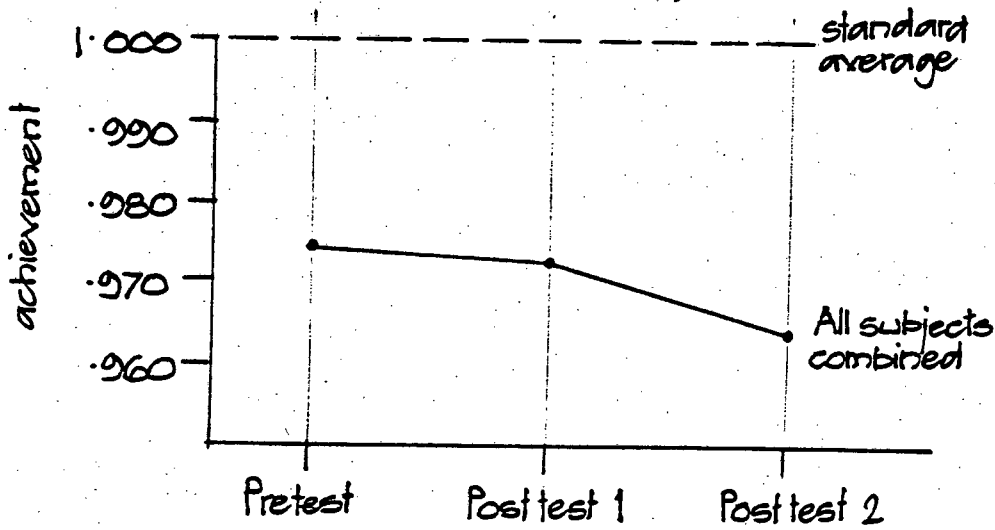


TABLE 8.13 : ACHIEVEMENT ANOVA SUMMARY TABLE (STUDY 2)

SOURCE	SS	DF	MS	F
A	.019	1	.019	.29
B	.013	1	.013	.19
A x B	.188	1	.188	2.77
ERROR	1.355	20	.068	
C	.002	2	.002	.15
A x C	.022	2	.022	1.90
B x C	.009	2	.009	.77
A x B x C	.000	2	.006	.01
ERROR	.242	42	.006	

INTERPRETATION:

There were no significant three-factor or two-factor interactions, nor were there significant main effects for factors A, B or C indicating that academic performance remained constant over the various conditions. The null hypotheses were therefore accepted. However, again the very slight decline over time was discernible.

8.2.3 Univariate Analysis of Self-concept : Study 2

TABLE 8.14 : SELF-CONCEPT MEANS AND STANDARD DEVIATIONS (STUDY 2)

	A1B1	A1B2	A2B1	A2B2	C Means
C1	49.5 (21.85)	49.33 (9.65)	56.14 (8.69)	50.0 (9.36)	51.38
C2	48.67 (7.24)	53.33 (5.80)	59.71 (6.26)	49.86 (5.38)	53.04

TABLE 8.15 : SELF-CONCEPT ANOVA SUMMARY TABLE (STUDY 2)

SOURCE	SS	DF	MS	F
A	552245.17	1	552245.17	.17
B	1509168.00	1	1509168.00	.68
A x B	3334746.47	1	3334746.47	.47
ERROR	70505897.37	22	3204813.52	
C	693282.36	1	693282.36	1.93
A x C	1121.44	1	1121.44	.00
B x C	281589.01	1	281589.01	.39
A x B x C	1632948.24	1	1632948.24	4.54 #
ERROR	9919490.70	22	359976.85	

= $p < .05$ (trend only)

INTERPRETATION

There were no significant three- or two-factor effects, nor any significant main effects. The three-factor interaction would have just reached significance had alpha been set at .05 (F calculated 4.54 F critical 4.30 $p < .05$). This is therefore interpreted as a trend only, limited to the April/May attention-placebo group, which showed a within-group increase in self-concept from pre- to posttest.

8.3 UNIVARIATE ANALYSES OF STUDY 3

8.3.1 Univariate Analysis of Test Anxiety : Study 3

TABLE 8.16 : TASC MEANS AND STANDARD DEVIATIONS
(STUDY 3)

	A1B1 Class A Exper	A1B2 Class A Control	A2B1 Class B Exper	A2B2 Class B Control	C Means
C1 (pre)	30.17 (8.52)	28.83 (9.83)	53.83 (17.93)	48.50 (13.87)	40.33
C2 (post)	12.33 (5.92) n = 6	26.00 (11.26) n = 6	48.50 (10.97) n = 6	39.50 (20.39) n = 6	31.58

As the distribution of the Amended TASC was skewed, log transformations of the data were performed prior to analysis to yield one more normal in shape. Hartley's test (Kirk, 1970) was used to test the homogeneity of subgroup variances.

TABLE 8.17 : AMENDED TASC ANOVA SUMMARY TABLE
(STUDY 3)

SOURCE	SS	DF	MS	F
A (Class)	1.254	1	1.254	24.83 **
B (Treatment)	.014	1	.014	.28
A X B	.179	1	.179	3.55
ERROR	1.009	20	.051	
C (pre-post)	.331	1	.331	23.59 **
A x C	.083	1	.083	5.96 **
B x C	.054	1	.054	3.83
A x B x C	.155	1	.155	11.07 **
ERROR	.281	20	.014	

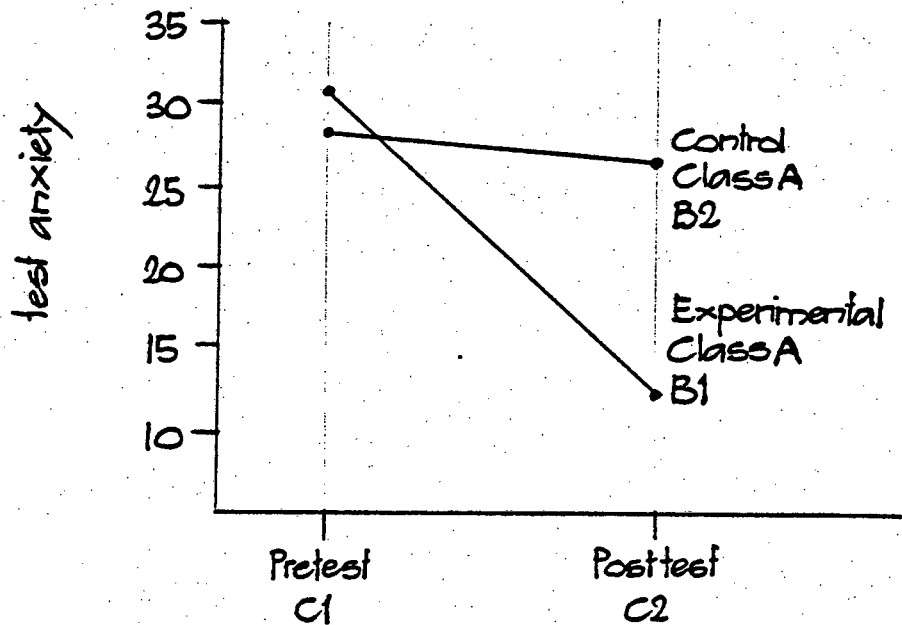
** = $p < .016$ (Bonferroni's correction)

As indicated by the above cell mean profiles and summary table, there was a significant three-factor interaction, therefore interpretation of significant main effects was not strictly possible. Rather, analysis of simple interactions effects was undertaken.

TABLE 8.18 : ANALYSIS OF SIMPLE INTERACTION EFFECTS
AMENDED TASC (STUDY 3)

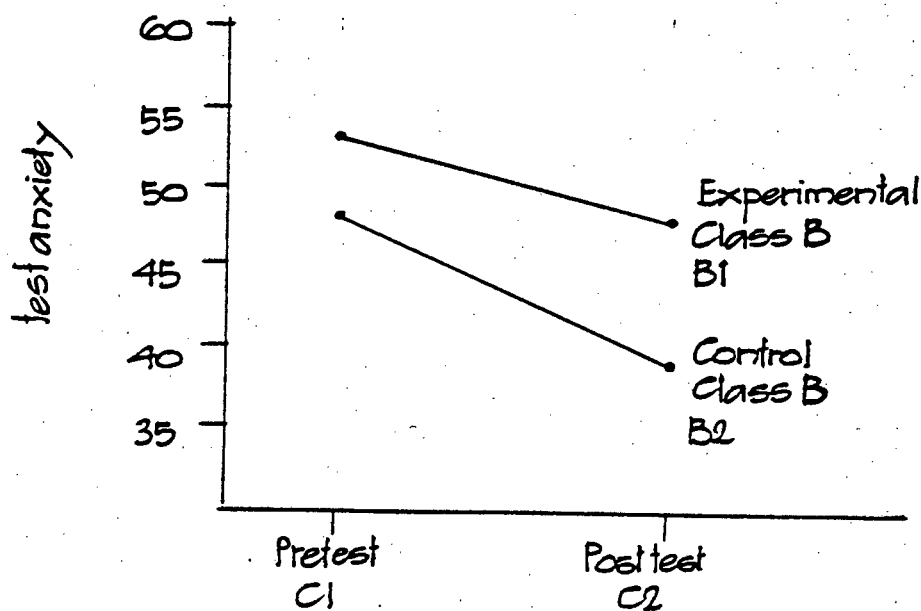
SOURCE	SS	DF	MS	F
AB AT C1	.000	1	.000	.01
AB AT C2	.335	1	.335	10.40 **
ERROR	.968	30	.032	
AC AT B1	.234	1	.234	16.67 **
AC AT B2	.006	1	.006	.40
ERROR	.281	20	.014	
BC AT A1	.197	1	.197	14.00 **
BC AT A2	.013	1	.013	.94
ERROR	.281	20	.014	

Figure 5: Class A Bat C Cell Mean Profiles :
Test Anxiety (Study 3)



Note higher levels of test anxiety in Class B subjects

Figure 6: Class B Bat C Cell Mean Profiles:
Test Anxiety (Study 3)



As AB at C1, AC at B2, and BC at A2 were not significant, simple main effects: A at C1, B at C1, A at B2, C at B2, B at A2 and C at A2 were examined.

TABLE 8.19: RELEVANT SIMPLE MAIN EFFECTS: AMENDED TASC (STUDY 3)

SOURCE	SS	DF	MS	F
A AT B2	.241	1	.241	4.80 **
ERROR	1.01	20	.051	
A AT C1	.344	1	.344	10.69 **
ERROR	.968	30	.032	
B AT A2	.047	1	.047	2.92
ERROR	1.01	20	.051	
B AT C1	.006	1	.006	.19
ERROR	.968	30	.032	
C AT A2	.041	1	.041	2.91
ERROR	.281	20	.014	
C AT B2	.059	1	.059	4.20
ERROR	.021	20	.014	

INTERPRETATION OF SIMPLE MAIN EFFECTS

A at B2

Class A Control subjects reported significantly less test anxiety than Class B Control subjects.

A at C1

Class A subjects reported significantly less test anxiety than Class B at pretest.

B at A2

There was no significant difference between the Experimental and Control subjects in Class B, indicating that no treatment effect had occurred.

B at C1

Pooled E3 subjects were equivalent in level of pretest test anxiety to pooled C3 subjects.

C at A2

There was no significant difference in level of test anxiety from pre to post testing in Class B subjects.

C at B2

No significant decrease in test anxiety from pre- to posttest occurred in control subjects. However, it was close to reaching significance (F calculated 4.2 F critical 4.35) and cell means indicated that it was greatest in Class B control subjects.

Significant Simple Interaction Effects AB at C2, AC at B1 and BC at A1, were referred to relevant simple main effects for further analysis.

TABLE 8.20 : RELEVANT SIMPLE SIMPLE MAIN EFFECTS:
AMENDED TASC (STUDY 3)

SOURCE	SS	DF	MS	F
A at B1C1	.185	1	.185	5.73 #
A at B1C2	1.240	1	1.240	38.42 **
A at B2C2	.087	1	.087	2.71
ERROR	.768	30	.032	
B at A1C2	.343	1	.343	10.60 **
B at A2C2	.054	1	.054	1.68
ERROR	.768	30	.032	
C at A1B1	.557	1	.557	39.58 **
C AT A2B1	.004	1	.004	.27
ERROR	.051	20	.014	

INTERPRETATION OF SIMPLE SIMPLE MAIN EFFECTS

A at B1C1 and A at B1C2

The experimental group from Class A displayed less test anxiety at pretest than the experimental group from Class B ($p < .05$) and this difference had increased substantially by posttest ($p < .01$).

A at B2C2

By posttest, Class A controls did not differ significantly in test anxiety from Class B controls, although they had done at pretest.

B at A1C2

Although they had not differed initially in level of test anxiety, by posttest a significant difference between-group difference

was apparent between Class A experimental and control subjects, with experimental subjects scoring less ($p < 0.01$).

B at A2C2

No significant between-group difference in test anxiety was apparent at posttest between Class B experimental and control subjects.

C at A1B1

There was a significant within-group reduction in test anxiety in Class A experimental subjects ($p < .01$).

C at A2B1.

There was no within-group reduction in test anxiety in Class B experimental subjects.

SUMMARY:

When classes were combined, the experimental and control groups were equivalent in level of pretest test anxiety. However, the subgroups from the two classes revealed significantly different levels of pretest test anxiety: as hypothesised, Class A subjects obtained significantly lower scores than Class B subjects.

The significant interaction effect indicated that intervention had different effects in subjects from the two classes. Class A experimental subjects (i.e. those who were above average in mathematical aptitude)

showed a significant drop in their level of test anxiety while Class A control subjects did not, leading to a significant between-group difference in these two subgroups. In contrast, Class B experimental subjects (i.e. those who were below-average in mathematical aptitude) showed no such decline in test anxiety while control subjects in the same class showed a non-significant decline. Thus, while the initial difference between Class A and Class B experimental subjects was maintained and strengthened in those receiving intervention, the difference between Class A and Class B control groups decreased, and was no longer significant.

8.3.2 Univariate Analysis of Achievement : Study 3

TABLE 8.21 : ACHIEVEMENT MEANS AND STANDARD DEVIATIONS (STUDY 3)

	A1B1 Class A Exper	A1B2 Class A Control	A2B1 Class B Exper	A2B2 Class B Control	C Means
C1 (pre)	1.025 (.13)	1.097 (.09)	.902 (.07)	.900 (.08)	.981
C2 (post 1)	1.040 (.18)	1.090 (.14)	.895 (.09)	.882 (.03)	.977
C3 (post 2)	1.040 (.10)	1.098 (.29)	.878 (.21)	.838 (.14)	.963

TABLE 8.22 : Achievement : AC Means (Study 3)

	C1	C2	C3
A1	1.061	1.066	1.067
A2	.901	.888	.858

Figure 7 : A at C Cell Mean Profiles:
Achievement (Study 3)

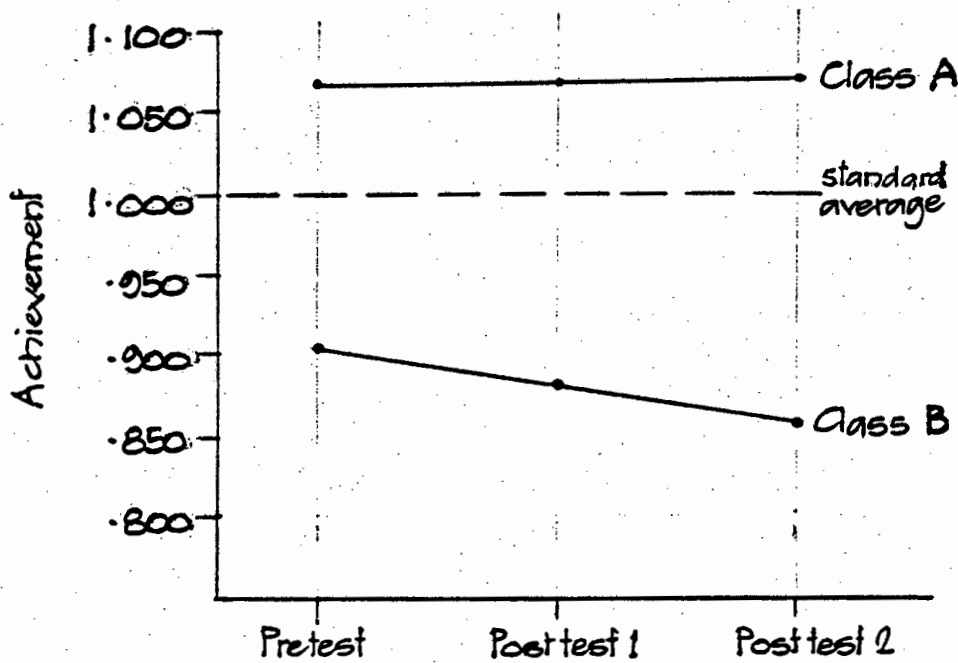


TABLE 8.23 : ACHIEVEMENT ANOVA SUMMARY TABLE (STUDY 3)

SOURCE	SS	DF	MS	F
A (Class)	.596	1	.596	15.77 **
B (Treatment)	.008	1	.008	.22
A x B	.028	1	.028	.75
ERROR	.756	20	.038	
C (Pre-post)	.005	2	.002	.85
A x C	.007	2	.007	1.35
B x C	.002	2	.002	.33
A x B x C	.001	2	.001	.26
ERROR	.106	40	.003	

INTERPRETATION

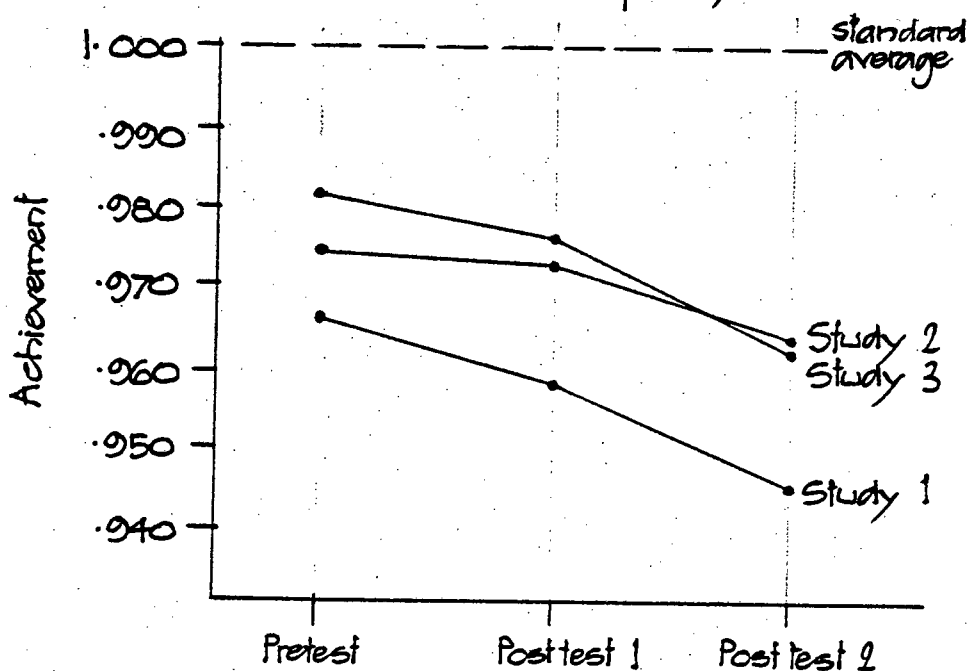
There were no significant three-factor or two-factor interactions, but a main effect was apparent for Factor A (Class) ($p < .01$). Class A subjects, considered to have above-average mathematical aptitude, obtained higher overall achievement scores than Class B subjects, a finding that was not dependent upon experimental condition nor whether the examinations were written in Standard 3 (pre-test) or Standard 4 (post-test 1) or Standard 5 (post-test 2). The B main effect was not significant, indicating that treatment did not significantly affect achievement.

SUMMARY

The null hypotheses were accepted with the exception of that which referred to the pretest equivalence of the two classes. Results showed a significance difference between the two classes, in favour of Class A, confirming that mathematical aptitude is related to general academic achievement.

In common with analyses of achievement data from Studies 1 and 2, the pooled data (C means) from Study 3 suggested that test-anxious subjects tended to drop slightly in achievement each year, a process which was not halted by the remedial treatment given (see Figure 8). Cell means of Study 3 suggested in addition, however, that this decline might be restricted to Class B subjects, and to the greatest degree in Class B controls, while Class A subjects appeared to hold their positions. Further follow-up over a longer period of time would be needed to determine whether this is a random finding, or whether there is, indeed, such a trend.

Figure 8 : C Mean Profiles : Achievement :
All Studies (combined experimental
and control subjects)



8.3.3 Univariate Analysis of Self-concept : Study 3

TABLE 8.24 : SELF-CONCEPT MEANS AND STANDARD DEVIATION (STUDY 3)

	A1B1 Class A Exper	A1B2 Class A Control	A2B1 Class B Exper	A2B2 Class B Control	C Means
C1 (pre)	57.00 (11.21)	64.33 (3.23)	45.00 (13.15)	40.5 (15.50)	51.71
C2 (post)	57.17 (18.26)	62.33 (5.05)	44.67 (11.52)	44.5 (20.27)	52.17

TABLE 8.25 : SELF-CONCEPT ANOVA SUMMARY TABLE (STUDY 3)

SOURCE	SS	DF	MS	F
A (Class)	31848579.19	1	31848579.19	11.82 **
B (Treatment)	816669.19	1	816669.19	.30
A X B	1203650.02	1	1203650.02	.45
ERROR	53904004.08	20	2695200.20	
C (Pre-post)	102397.69	1	102397.69	.40
A X C	164151.02	1	164151.02	.64
B X C	9380.02	1	9380.02	.04
A X B X C	509765.75	1	718586.02	2.82
ERROR	5097365.75	20	254868.29	

INTERPRETATION

There were no significant three- or two-factor interaction effects and no significant B or C main effects. There was, however, a significant A main effect ($p < .01$) indicating that subjects in Class A had significantly higher

self-concept scores than subjects in Class B, an effect which did not depend on whether they were experimental or attention-placebo subjects, nor whether the scores were obtained at pre- or posttest.

SUMMARY

With the exception of the expected class difference in favour of Class A, the null hypotheses were accepted. Contextualised remediation did not have a significant effect upon reported self-concept, with no changes occurring from pre- to posttesting.

The class difference might be accounted for in terms of the influence that children's classroom performance (and class placement where applicable) has upon their status in primary school, which in turn influences their view of themselves: where status is high, so is self-concept. This suggests that self-concept results from good experiences at school, but as has already been discussed, it is probable that it is a reciprocal process whereby an already positive self-concept enables good performance.

8.4 SUBSCALES OF THE TEST ANXIETY SCALE FOR CHILDREN (TASC)

Analyses of within-group and between-group change in the four subscales of the TASC (Feld & Lewis, 1969) were conducted by means of Hotelling's T-squared tests on change scores to determine whether use of the subscales enabled experimental effects to be determined more precisely. Analyses

were additionally undertaken for the balance of pupils in each standard to determine effects of repeated testing.

The four subscales were Test Anxiety (TA) which has 10 items, School Concerns (RSC) with 6 items, Poor Self-Evaluation (PSE) with 6 items, and Somatic Signs of Anxiety (SSA) with 7 items. These items, together with means and standard deviations obtained by the different groups, are given in Appendix J. It should be noted that only 21 of the 30 items of the full scale of the TASC appear in the subscales, with some of them appearing in more than one subscale. For the purposes of these studies, the two additional items devised by Feld and Lewis were not included. Data on the Full Scale precedes subscale analyses.

8.4.1 Study 1 (School A 1985)

TABLE 8.26: FULL SCALE AND SUBSCALE TASC WITHIN-GROUP DIFFERENCES (STUDY 1) FULL SCALE

GROUP	t- test		df		
Experimental 1	-5.99	**	19		
Control 1	-2.83	*	19		
Balance 1	-2.39	**	39		
SUBSCALES					
GROUP	TA	RSC	PSE	SSA	F
E1	-5.38**	-2.11*	-3.17**	-3.75**	6.57**
C1	-2.39*	-.71	-1.92	-3.17**	4.34*
B1	-2.56**	.46	-3.66**	-1.17	4.00**

INTERPRETATION

The experimental group (E1), which received contextualised intervention, showed the most marked within-group differences from pre- to posttest on the Full Scale ($p < .01$), followed by the balance of pupils (B1) ($p < .01$), with the control subjects (C1) showing a somewhat less significant reduction ($p < .05$). This pattern was repeated in terms of overall significance in the subscales.

Scrutiny of individual subscales revealed that the E1 group showed significant reduction in all four subscales. The B1 group dropped significantly in Test Anxiety and Poor Self-Evaluation but not in Remote School Concerns or Somatic Signs of Anxiety (in which they were low at the start). The C1 group showed a marked reduction in Somatic Signs of Anxiety, somewhat less in Test Anxiety and no change in Remote School Concerns and Poor Self Evaluation.

Results of a Hotelling's T-squared test comparing E1 and C1 on the subscales showed there to be no significant between-group differences ($F = 1.28$ df 4,35 $p > .05$).

8.4.2 Study 2 (School B 1985)

TABLE 8.27 : FULL SCALE AND SUBSCALE TASC WITHIN-GROUP DIFFERENCES (STUDY 2)

FULL SCALE					
GROUP	t- statistic				
Experimental 2	-3.25 **				df 12
Attention-Placebo	-2.56 *				df 12
Balance 2	- .53				df 39
SUBSCALES					
GROUP	TA	RSC	PSE	SSA	F
E2	-2.76*	-2.49*	-1.15	-2.92*	2.18 *
A-P	-3.55**	-4.92**	.00	-1.74	10.4 **
B2	- .63	- .21	2.60**	- .38	1.69

INTERPRETATION

The group receiving intervention (E2) showed very significant within-group change on the Full Scale TASC ($p < .01$) while the attention-placebo (A-P) group displayed a less marked within-group change ($p < .05$). The balance of pupils (B2) showed no significant change.

The above pattern was reversed for E2 and A-P on the subscale analysis, however, as the group to show the greatest overall change on the subscales was the A-P group ($p < .01$), with the greatest reduction occurring in Remote School Concerns ($p < .01$) followed by Test Anxiety ($p < .01$), while

Somatic Signs of Anxiety did not change significantly and Poor Self Evaluation did not change at all. E2 subjects showed significant overall change ($p < .05$), with significant changes in Test Anxiety, Somatic Signs of Anxiety and Remote School Concerns ($p < .05$) but no change in Poor Self Evaluation. B2 showed negligible decreases in three of the four subscales and a significant increase in Poor Self Evaluation.

Results of a Hotelling's T-squared test comparing E2 and A-P on the subscales

showed there to be no significant between-group differences ($F = .422$ $df\ 4,35$ $p > .05$).

8.4.3 Study 3 (School B 1986)

Full Scale and subscale change score comparisons were undertaken for both the Amended TASC and the TASC as answer sheets were scored in accordance with both the new and original scoring systems. The TASC data were thus not directly comparable to TASC data from Studies 1 and 2 as they were obtained as a result of different instructions to the subjects. They were nevertheless of interest in determining the effect on reported change of the greater leeway in response: whether, given this option, children elected to report relatively minor degrees of change which would be detected by the Amended TASC, but not show up at all on the TASC where only radical shifts (from "yes" to "no") manifested as change (these will be referred to as "relative" and "absolute" shifts, respectively).

TABLE 8.28 : TASC AND AMENDED TASC FULL SCALE AND SUB-SCALE WITHIN-GROUP DIFFERENCES (STUDY 3)

FULL SCALE

	TASC	AMENDED TASC	
	t-statistic	t-statistic	
GROUP			
Experimental 3	-3.69 **	-4.13 **	df 11
Control 3	-1.10	-1.63	df 11
Balance 3	-1.58	-1.80	df 37

SUBSCALES

AMENDED TASC

GROUP	TA	RSC	PSE	SSA	F
E3	-3.75 **	-4.21 **	-2.64 *	-1.77	10.33 **
C3	-1.88	- .30	- .50	-1.44	1.01
B3	-2.49 *	.00	.37	- .25	2.87 *

TASC

GROUP	TA	RSC	PSE	SSA	F
E3	-3.86 **	-3.80 **	-2.03	- .97	10.59 **
C3	-1.34	.71	- .97	-.81	.74
B3	-1.57	-.23	-.10	.14	1.58

INTERPRETATION:

In both the TASC and Amended TASC Full Scale, only the treated group (E3) showed significant pre-post change ($t = -3.69$ and -4.13 respectively, $p < .01$). There was a tendency for more relative than absolute shifts in anxiety to occur, as shown by the somewhat higher t-score for the Amended TASC.

The subscale analyses for E3 showed little difference between the overall F's for the Amended TASC and the TASC ($F = 10.33$ and $F = 10.59$ respectively, $p < .01$). This may be taken as an encouraging indication that treatment brought about as much absolute, as relative, change overall. Similar reductions occurred in Remote School Concerns and Test Anxiety on the Amended TASC and the TASC, indicating that relative and absolute shifts occurred at about the same frequency, whereas Poor Self-Evaluation showed significant change only on the Amended TASC, indicating that change on this subscale was less definite. The control group (C3) showed no significant changes on the subscales, and the balance of classes (B3) showed significant relative reductions on the Amended TASC Test Anxiety subscale only.

When E3 and C3 were compared, between-group differences on the subscales were not sufficiently large to show up as significant on either the TASC or the Amended TASC.

8.4.4 Summary and Discussion

Change measured on the subscales showed some differences to change assessed on the Full Scale of the TASC. Thus, in Study 1, only the experimental group showed significant change on both the Full Scale and Subscales, whereas control subjects showed significant change only on the subscales; in Study 2, subjects in the experimental group showed more reduction than attention-placebo subjects on the Full Scale ($p < .01$ vs $p < .05$), yet less on the overall F of the subscales ($p < .05$ vs $p < .01$). In Study 3, Full Scale and subscales results were in accord, and indicated that only the experimental group showed significant change. Comparison of Amended TASC and TASC changes in the subscales in this study shed interesting light on relative and absolute shifts in anxiety, both of which were apparent in the treated group.

As the Full Scale includes items omitted from the subscales because of low factor loadings, it would seem that the greater the change evidenced on this, the more global the change. Supporting this supposition is the finding that the greater the degree of change on the Full Scale, the greater were the number of individual subscales showing significant change. Thus, in Study 1, experimental subjects showed significant change on all four subscales, while control subjects changed only on Test Anxiety and Somatic Signs of Anxiety. In Study 2, even though the overall F for the subscales was higher for attention-placebo controls than for the experimental group, the former changed on only two subscales while the latter showed significant change on three, in keeping with their greater

change on the Full Scale. Data from combined classes in Study 3 again showed a pattern of global change in the experimental group, with significant change occurring in 3 of the 4 subscales of the Amended TASC, whereas the control group showed no significant change in any subscale.

These results suggest that global change was restricted to those groups which received theoretically relevant treatment. It appears that such intervention had an effect on all, or most, of the dimensions of the TASC, and not only upon Test Anxiety and Somatic Signs of Anxiety as might have been expected in light of the theoretical assumptions. Surprisingly, the one subscale which was not not changed to any significant degree by treatment in Study 3 was the Somatic Signs of Anxiety subscale, even though treatment directly addressed this component. This supports Diane Arnkoff's contention (1983, 1986) that the change processes resulting from a treatment cannot be predicted from the content of the treatment procedures alone.

The less substantial and more inconsistent change evident in control groups might be interpreted as being less meaningful. Such subscale change as occurred was apparent only in Studies 1 and 2, and was confined to two subscales for each of the non-identified control group of Study 1 and the attention-placebo control group of Study 2, with both showing change in the Test Anxiety subscale. This could indicate the effect of demand characteristics implicit in the test-retest situation where the researcher conducted both tests. The attention-placebo control group was incorporated in Study 2 specifically to control for demand characteristics and subjects' beliefs in the curative effects of treatment or expectancy for

change: they had been told that the purpose of their treatment was to help them to reduce their test anxiety. Hence, reduction in this subscale could indicate successful generation of expectancies for change. It is worth noting that the self-concept enhancement exercises they underwent had no effect on Poor Self Evaluation, possibly because the items in this subscale are specific to evaluation in the school situation, while the exercises were more general in nature, but which might also reflect the lack of demand characteristics in regard to this, or perhaps be in response to certain environmental characteristics which remained constant.

Offering some support to the last of these speculations is the fact that little or no decrease in Poor Self Evaluation was apparent in any groups from Studies 2 and 3 (School B), with the balance of pupils in Study 3 actually showing a significant increase, whereas in Study 1 (School A) there was a very significant decrease in both the experimental and the balance of pupils, and a non-significant decrease in controls. Possibly this was due to a greater degree of overt competitiveness and parental pressure at School B which the researcher felt to be evident.

In conclusion, it is considered that use of the TASC subscales was a definite advantage, offering an opportunity to detect subtle differences in reduction of test anxiety between the various groups, and suggesting that intervention brought about global change.

8.5 COMPARISON OF IMPROVED VERSUS NON-IMPROVED SUBJECTS

Since educators and clinical psychologists are more often concerned with individual improvement rather than with parametric group differences, the data were further evaluated on the basis of individually significant change scores. The criterion of improvement was a pre-post reduction on the test anxiety scale which was greater than 1.65 times the standard error of measurement for the instrument (after Paul, 1966). As no general standard error of measurement has been reported for the TASC, it was calculated for this population according to the formula :

$$\text{Standard Error of Measurement} = SD\sqrt{1-r_{ii}}$$

(Anastasi, 1976)

The standard deviation used (6.0) was the average of those obtained on pre- and posttests on the TASC in this population, and as the pretest posttest correlation coefficient is an acceptable reliability coefficient (Anastasi, 1976), this was used ($r_{ii} = .63$). This gave as a significant measure of improvement a change of more than -6 on the 30 item instrument. Using the same method, but substituting data from the Amended TASC ($SD = 15.48$; $r_{ii} = .77$) meaningful change for subjects in 1986 was quantified as a change of more than -13 on the Amended TASC. (Note: in view of the skewed distribution of the Amended TASC, robust standard deviations of pre- and posttest scores were used to obtain the average SD).

TABLE 8.29 : NUMBER AND PERCENTAGE IMPROVED VERSUS NON-IMPROVED (STUDIES 1,2 AND 3)

		Improved	Non-improved	
Study 1 1985	E1	8 (40%)	12 (60%)	n = 20
	C1	5 (25%)	15 (75%)	n = 20
Study 2 1985	E2	4 (31%)	9 (69%)	n = 13
	A-P	6 (46%)	7 (54%)	n = 13
Study 3 1986	E3	5 (42%)	7 (58%)	n = 12
	C3	4 (33%)	8 (67%)	n = 12

KEY:

E1	Experimental 1 (children + parents + teachers)
C1	Control 1 (no-treatment, non-identified, controls)
E2	Experimental 2 (children only)
A-P	Attention-Placebo controls
E3	Experimental 3 (modified E1)
C3	Control 3 (as C1)

TABLE 8.30 : TEST ANXIETY CHANGES: MEANS AND STANDARD DEVIATIONS (STUDIES 1,2 AND 3)

		Improved	Non-improved
TASC			
Study 1 1985	E1	-11.38 (2.6)	-2.92 (1.68)
	C1	- 9.0 (2.0)	-1.07 (2.47)
Study 2 1985	E2	-13.75 (5.38)	-2.11 (1.45)
	A-P	-10.17	0.43
Amended TASC			
Study 3 1986	E3	-21.4 (2.97)	-4.57 (5.44)
	C3	-19.75 (4.37) (5.6)	1 (8.6)

Tables 8.29 and 8.30 show that in Study 1 there was a 40% improvement rate in test anxiety in subjects receiving a contextualised remediation programme, compared with a 25% improved rate for non-treated controls, and that treated subjects showed a somewhat greater decrease with less variation in score than in those control subjects who improved. Study 2, on the other hand, resulted in more of the attention-placebo control group showing improvement than those receiving theroretically relevant, albeit not contextualised, remediation: 46% of the former showed improvement compared to 31% of the latter and although the mean decrease of the treated group was higher than that of the attention-placebo

group, the standard deviations indicate less variation in the latter (5.38 compared with 1.72).

In Study 3, when subjects from the two classes were pooled, results were very similar: 42% of treated subjects improved compared to 33% of non-treated controls, indicating a very minor treatment effect. The remediation programme was again contextual and as with Study 1, decreases in the treated group of "improved" subjects indicated that the degree of improvement was somewhat greater and less variable than in control "improved" subjects.

However, results of the test anxiety analysis of variance for Study 3 revealed the presence of significant interaction effects when subgroups from the two classes were compared. To recap briefly: treated subjects from the above-average mathematical aptitude class (Class A) showed a significant decrease in test anxiety, whereas this did not occur in treated subjects from the below-average mathematical aptitude class (Class B); while control subjects in Class A showed no drop, those in Class B did, although not to a significant degree. The percentage of improved versus non-improved was therefore compared for each of the two classes.

TABLE 8.31 : NUMBER AND PERCENTAGE IMPROVED VERSUS NON-IMPROVED CLASSES A & B (STUDY 3)

	Improved	Non-improved	
A E3	4 (66%)	2 (33%)	n = 6
A C3	0 (0%)	6 (100%)	n = 6
B E3	1 (17%)	5 (83%)	n = 6
B C3	4 (66%)	2 (33%)	n = 6

TABLE 8.32 : AMENDED TASC CHANGES : MEANS AND STANDARD DEVIATIONS : CLASSES A & B (STUDY 3)

	Improved	Non-improved
A E3	-22.25 (2.6)	-9.00 (1.4)
A C3	-0.0	-2.83 (5.6)
B E3	-18.00 (0.0)	-2.8 (5.5)
B C3	-19.75 (4.6)	+12.5 (3.5)

An interesting pattern of interaction emerged, reflecting that obtained earlier in the univariate test anxiety analysis: in Class A, all experimental subjects showed a decline in test anxiety, with 66% dropping sufficiently to be categorised as "improved", and the balance dropping 9 points. The control group, on the other hand, displayed a very modest mean

decline and none declined to any significant degree. In Class B, the pattern was reversed, with only one experimental subject (17%) who improved, with the balance showing very little change, whereas 66% of the controls improved. It should be noted, however, that the remaining 33% showed a mean increase of 12.5 points.

The univariate analyses had indicated that subgroups of subjects from the two classes differed in mean levels of pretest test anxiety, self-concept and achievement, and it was known that they differed in mathematical aptitude. They also differed in IQ score, with group means showing striking differences: Class A Experimental group: 123.00 (SD 6.99); Class B Experimental group: 108.67 (SD 8.52); Class A Control group: 122.67 (SD 3.83) and Class B Control group: 109.17 (SD 12.53).

In order to explore which of these might underlie this intriguing pattern of results, reanalyses of the data were conducted, comparing "improved" and "non-improved" experimental and control subjects, and also including other variables which might play a role.

As the interaction effect had only emerged when data of relatively homogenous subgroups of subjects were analysed in Study 3, it seemed possible that the relatively weak effects of treatment in Studies 1 and 2 might be as a result of similar, but obscured, interaction effects - obscured because groups were heterogenous in nature, having been drawn from unstreamed classes. Identical reanalyses of data from these studies was therefore also undertaken.

8.6 SUBJECT CHARACTERISTICS

As interaction was of interest, the statistical procedure of choice was 2-way Analysis of Variance, with Factor A being Improvement (two levels: Improved and Non-improved) and Factor B being Condition (two levels: Experimental and Control). Dependent variables were Age, pre-test Self-Concept, pre-test Achievement, Verbal IQ, Non-verbal IQ, Total IQ, Teacher Assessment (Study 1 only), number of sessions attended by parents (Studies 1 and 2 only), number of siblings and position in family. Also included as dependent variables were change scores on Self-concept and Achievement from pre to post-testing. Pre-test test anxiety scores are included but were not subjected to analysis as grouping of subjects was conducted on the basis of change in test anxiety.

The multiple dependent variables increased the probability of Type 1 errors, and use of the Bonferroni correction would have set alpha at the very stringent level of .004, quite possibly ignoring potentially meaningful relationships. As there were three studies, it was decided to leave alpha at .05, but only pay attention to commonalities between them.

N.B. Data for Study 3 precedes those for Studies 1 and 2.

8.6.1 Subject Characteristics: Study 3

Data from classes A and B were pooled to facilitate comparison with Studies 1 and 2.

TABLE 8.33 : MEANS AND STANDARD DEVIATIONS SUBJECT CHARACTERISTICS (STUDY 3)

		Improved		Non-improved	
		E3	C3	E3	C3
1.	Age	135.40	137.25	139.71	136.88
2.	Self-concept (pre-test)	54.75 (18.3)	56.00 (3.69)	52.33 (15.6)	44.29 (8.9)
3.	Achievement (pre-test)	.990 (.13)	.920 (.06)	.966 (.13)	1.037 (.14)
4.	Verbal IQ	119.80 (14.39)	107.25 (15.99)	111.57 (10.69)	121.13 (8.86)
5.	Non-verbal IQ	119.60 (8.79)	105.50 (7.30)	111.57 (13.69)	119.88 (7.94)
6.	Total IQ	120.40 (6.35)	106.50 (12.04)	112.57 (12.14)	122.00 (8.30)
7.	Parents' sessions (attendance)	2.0 (2.0)	N/A	2.9 (2.3)	N/A
8.	Children in family	3.0 (1.2)	2.75 (1.0)	2.0 (.96)	2.75 (.46)
9.	Position in family	3.0 (1.22)	1.75 (0.5)	1.71 (1.0)	1.75 (0.7)
10.	Self-concept diff	8.0 (6.8)	5.0 (17.8)	4.5 (9.6)	1.9 (8.2)
11.	Achdiff 1	0.001 (.08)	0.030 (.08)	- 0.034 (.07)	- 0.013 (.06)
12.	Achdiff 2	0.006 (.09)	- 0.015 (.07)	- 0.042 (.05)	- 0.023 (.06)
13.	Test anxiety (pre-test)	43.80 (23.4)	48.00 (16.1)	40.70 (15.4)	34.00 (13.6)

TABLE 8.34 : ANOVA SUMMARY TABLE: SUBJECT CHARACTERISTICS (STUDY 3)

VARIABLE	F-RATIOS		
	A Main Effects	B Main Effects	Interaction
1	0.61	0.04	0.87
2	0.63	0.04	0.24
3	1.35	0.09	1.11
4	0.32	0.09	4.86*
5	0.55	0.46	6.87*
6	0.84	0.28	7.73*
7	1.39	0.49	1.96
8	2.94	2.68	2.94
9	2.14	N/A	N/A
10	1.03	0.45	0.54
11	2.47	0.98	0.03
12	1.48	0.00	0.71

df 1,20

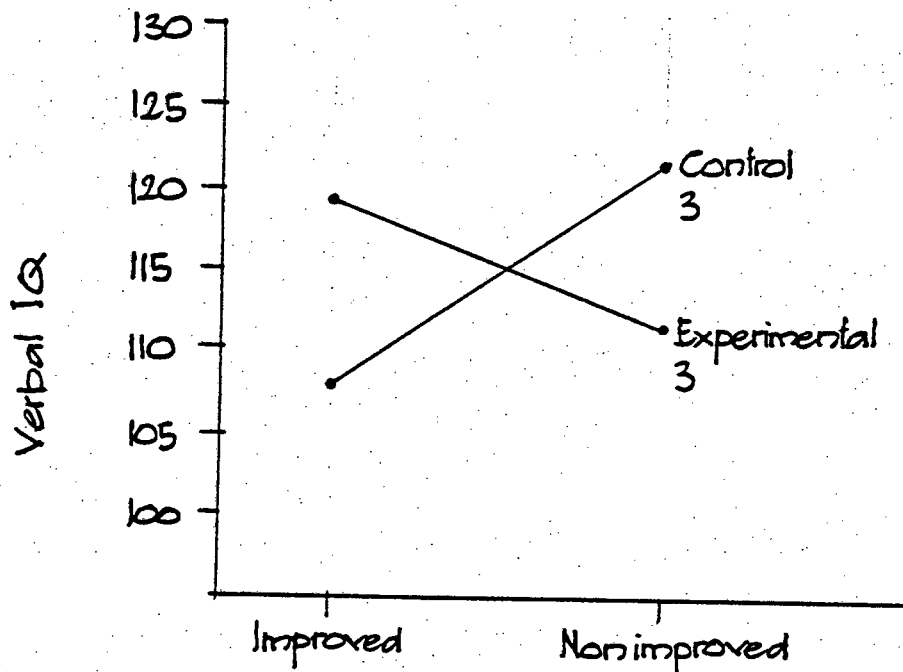
(transformations used for Self-concept data)

When experimental and control subjects were further classified as "improved" or "not-improved" on the basis of a reduction of 14 points or more on the Amended TASC, only the IQ variables (Verbal, Non-verbal and Total), discriminated between them, showing significant two-factor interactions. These were therefore analysed in more detail. The other seven showed no significant main effects nor interactions. Thus, whether improved or non-improved, experimental or control, subjects did not differ significantly in terms of their age, nor their pre-test self-concept or achievement, nor the way teachers ranked them, nor the number of children in the family, their birth position, nor, in the case of experimental subjects, the number of sessions of the parents' course that their parents attended. There were also no significant differences in change scores, indicating that meaningful change in test

anxiety was not accompanied by meaningful change in self-concept and achievement. Although not reaching significance, it is worth noting the interesting trend towards a lower self-concept in non-improved control subjects even though they tended to have higher achievement and IQ scores than improved controls. Levels of pre-test test anxiety showed a trend towards higher levels in improved control subjects and lower levels in non-improved controls, possibly indicating that improvements in controls were regression effects. While one would have expected to find lower initial levels of test anxiety in improved experimental subjects (on the basis of the ANOVAS), and higher initial levels in non-improved experimental subjects, this was not the case primarily because of the two experimental subjects from Class A who showed reductions of 9 and 10 respectively and hence were classified as non-improved, and the sole improved experimental subject from Class B who whose pre-test test anxiety score was the highest of any. There were no significant differences in proportion of boys and girls in the improved/non-improved experimental ($\chi^2 = 0.17$) or control ($\chi^2 = 0.04$) conditions.

8.6.1.1 Interaction Effects: Verbal IQ : Study 3

Figure 9 : Cell Mean Profiles :
Verbal IQ (Study 3)



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

TABLE 8.35: SIMPLE MAIN EFFECTS VERBAL IQ (STUDY 3)

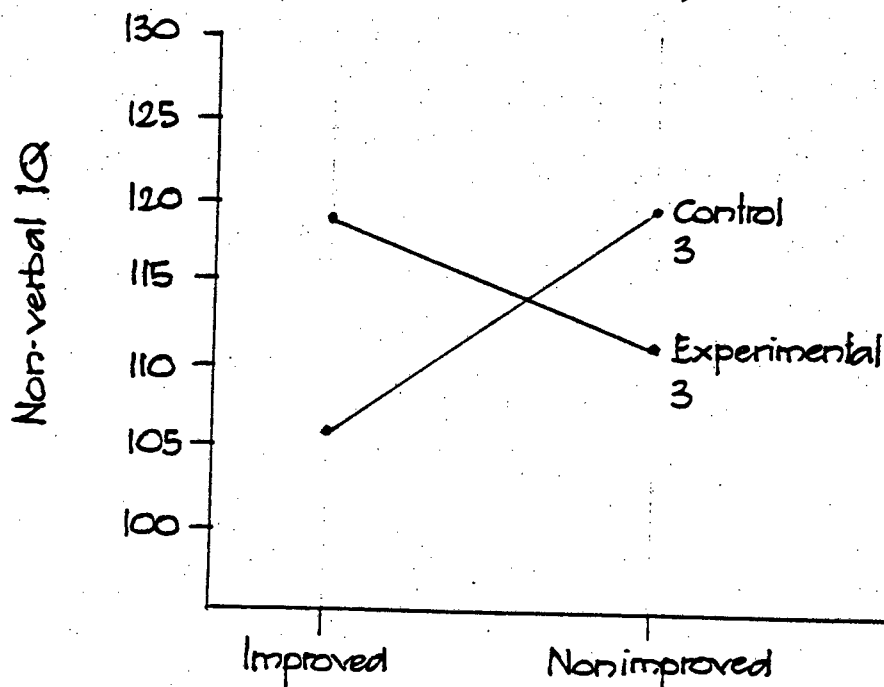
SOURCE	SS	DF	MS	F
A at B1	197.56	1	197.57	1.41
A at B2	513.75	1	513.75	3.67
B at A1	350.00	1	350.00	2.50
B at A2	341.20	1	341.20	2.44
ERROR	2798.14	20	139.91	

INTERPRETATION

None of the simple main effects reached significance. Trends were, however, in opposite directions: improved experimental subjects showed a slight trend towards having higher Verbal IQ than had non-improved experimental subjects, whereas there was a stronger trend towards lower mean Verbal IQ in improved than non-improved controls. Similarly, trends were evident towards higher Verbal IQ in improved experimental subjects than in improved control subjects, and lower Verbal IQ in non-improved experimental subjects than non-improved controls.

8.6.1.2 Interaction Effects : Non-verbal IQ : Study 3

Figure 10 : Cell Mean Profiles :
Non-verbal IQ (Study 3)



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

TABLE 8.36: SIMPLE MAIN EFFECTS NON-VERBAL IQ (STUDY 3)

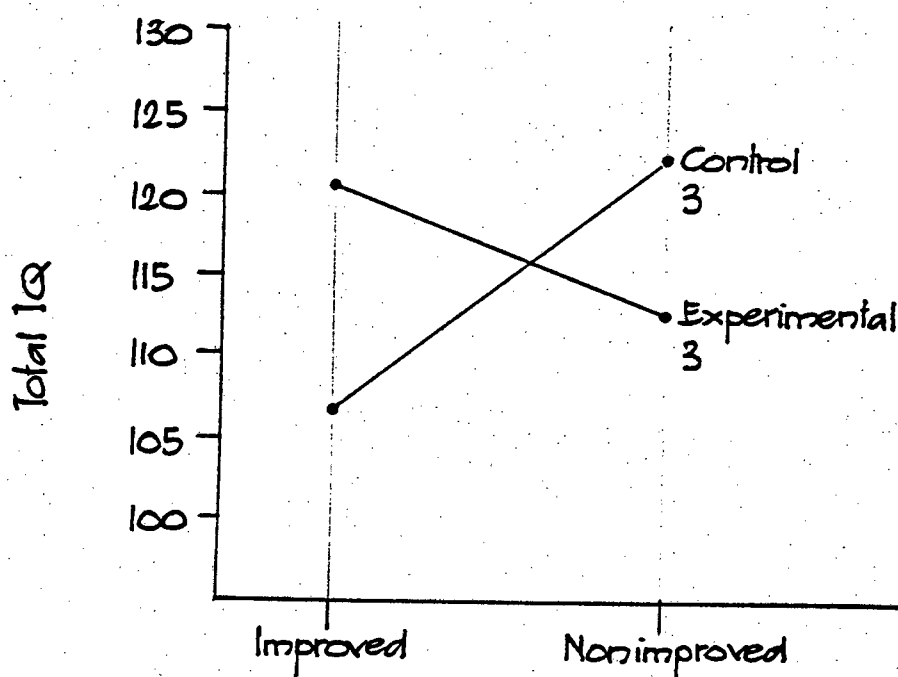
SOURCE	SS	DF	MS	F
A at B1	188.07	1	188.07	1.85
A at B2	549.89	1	549.89	5.40*
B at A1	441.80	1	441.80	4.34*
B at A2	256.57	1	256.57	2.52
ERROR	1961.91	20	98.10	

INTERPRETATION

The pattern of interaction effects in Non-verbal IQ was very similar, but stronger, to that in Verbal IQ. There was a non-significant tendency for improved experimental subjects to have lower scores than non-improved experimental subjects, while improved control subjects demonstrated significantly lower Non-verbal scores than non-improved control subjects. Improved experimental subjects had significantly higher scores than improved control subjects, while non-improved experimental subjects had non-significantly lower scores than non-improved controls.

8.6.1.3 Interaction Effects Total IQ : Study 3

Figure 11 : Cell Mean Profiles :
Total IQ (Study 3)



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

TABLE 8.37 : SIMPLE MAIN EFFECTS TOTAL IQ (STUDY 3)

SOURCE	SS	DF	MS	F-ratio
A AT B1	178.77	1	178.77	1.82
A AT B2	640.67	1	640.67	6.53 *
B AT A1	429.36	1	429.36	4.38 *
B AT A2	331.92	1	331.92	3.38
ERROR	1961.91	20	98.10	

As expected from data which were composites of the other two subscales, Total IQ yielded a very similar pattern of simple main effects. Thus, a consistent picture of interaction effects emerged from the IQ data of Study 3 (and it is acknowledged that the term "effects" is unsatisfactory when the factors are not manipulated variables, as was the case here). It became clear that those control subjects who showed a meaningful degree of anxiety reduction had significantly lower Non-verbal and Total IQ, and close to significantly lower Verbal IQ, than control subjects who did not show improvement. Trends existed to indicate an opposite pattern in experimental subjects: the tendency was for improved experimental subjects to have higher IQ scores than experimental subjects who did not improve. The lack of significant difference in experimental subjects may be partly attributable to the IQ scores of the only two non-improved experimental subjects from the high-ability class. Their scores were considerably higher than those of the other five non-improved experimental subjects, and hence may have had undue influence upon the sum of squares, variance and standard deviation, which have a high degree of sensitivity to extreme values (Hartwig and Dearing, 1982).

8.6.2 Subject Characteristics : Study 1

TABLE 8.38 : MEANS AND STANDARD DEVIATIONS SUBJECT CHARACTERISTICS (STUDY 1)

		Improved		Non-improved	
		E1	C1	E1	C1
1.	Age	137.38 (4.75)	139.60 (5.23)	136.50 (4.68)	134.93 (5.58)
2.	Pre-test self-concept	54.75 (8.0)	55.00 (5.2)	49.42 (14.3)	50.33 (12.8)
3.	Pre-test achievement	.996 (.12)	.988 (.11)	.875 (.08)	1.013 (.14)
4.	Teacher assessment	2.5 (.76)	2.2 (.45)	2.9 (.29)	2.3 (.72)
5.	Verbal IQ	99.25 (11.42)	107.00 (4.74)	101.25 (9.62)	110.87 (11.66)
6.	Non-verbal IQ	119.50 (14.56)	109.00 (2.92)	109.17 (13.68)	114.40 (12.76)
7.	Total IQ	108.00 (12.20)	108.40 (1.8)	104.67 (12.20)	112.80 (12.20)
8.	Parents' sessions (attendance)	2.1 (2.1)	N/A	2.8 (1.7)	N/A
9.	Children in family	2.4 (.7)	2.2 (.4)	2.3 (.5)	2.6 (.8)
10.	Position in family	2.1 (.8)	1.6 (.8)	1.8 (.7)	2.1 (1.0)
11.	Self-concept diff (post minus pre)	2.0 (5.4)	5.3 (10.9)	1.3 (7.12)	-1.29 (9.46)
12.	Achdiff 1 (post 1 minus pre)	-0.015 (.1)	-0.012 (.09)	-0.020 (.09)	0.054 (.14)
13.	Achdiff 2 (post 2 minus pre)	-0.010 (.13)	-0.048 (.1)	-0.044 (.09)	0.061 (.16)
14.	Pre-test test anxiety	20.00 (3.7)	19.2 (4.6)	17.75 (3.4)	17.80 (4.0)

TABLE 8.39 : ANOVA SUMMARY TABLE: SUBJECTS CHARACTERISTICS: (STUDY 1)

VARIABLE		F-RATIOS		
	A Main Effects	B Main Effects	Interaction	
1	2.31	0.03	1.08	
2	1.48	0.02	0.01	
3	0.68	4.03	2.13	
4	1.76	4.53*	0.47	
5	0.66	5.83*	0.07	
6	0.32	0.36	3.20	
7	0.02	1.40	1.15	
8	0.69	N/A	N/A	
9	0.87	0.04	0.87	
10	0.17	0.15	2.02	
11	1.03	0.45	0.54	
12	0.47	0.76	0.63	
13	0.53	0.44	1.97	

df 1,36

There were no significant interaction effects, thus in none of the above dependent variables did the effects of one factor vary according to levels of the other to any significant degree. However, in light of the interaction effects concerning IQ in Study 3, the trend towards significance evident for the interaction effects of Non-verbal IQ (F calculated 3.28; F critical 4.11) was of interest and was explored further (see below).

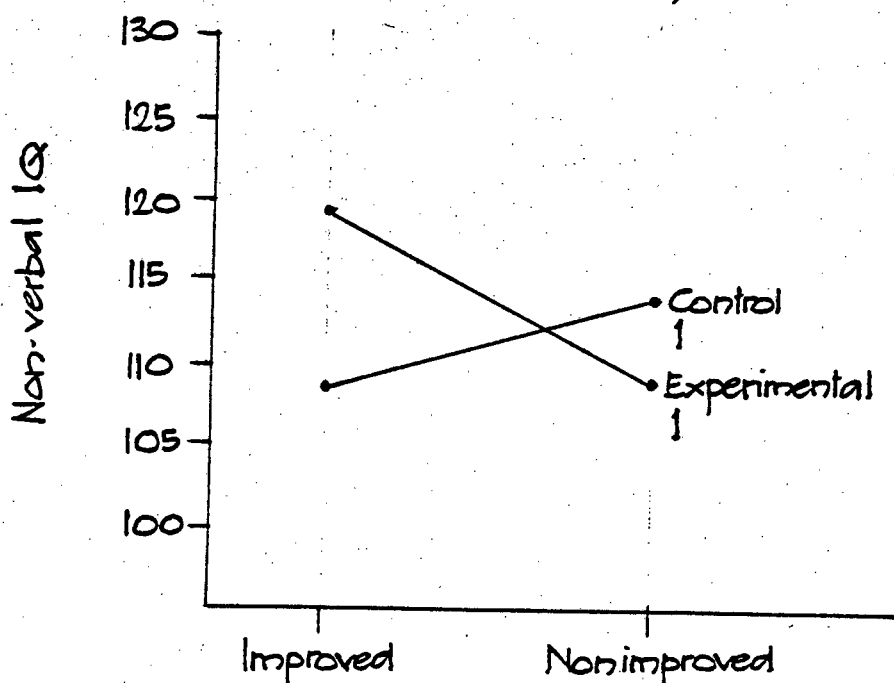
There were no significant A main effects, indicating that the improved and non-improved groups did not differ significantly on any variable. There were, however, two significant B main effects, concerning the variables of Teacher Assessment and Verbal IQ. Experimental subjects (those receiving test-anxiety remediation) had significantly lower Verbal IQ scores than controls

and were assessed less favourably by teachers in terms of future achievement (the higher the score on Teacher Assessment, the less favourable). In addition, the B main effect for pre-test achievement almost reached significance (F calculated 4.03; F critical 4.11). This lack of equivalence resulted from random assignment of subjects to experimental or control conditions, no attempt having been made to match on any measure of ability or achievement in this study, and had manifested as a main effect in the univariate analysis of achievement data from Study 1.

Levels of pre-test test anxiety were somewhat higher for both experimental and control improved subjects, indicating probable slight regression effects. As in Study 3, there were no significant differences in the proportion of boys and girls in improved/non-improved categories in either the experimental ($\chi^2 = 2.51$ df 1) or control condition ($\chi^2 = 0.28$ df 1), and no significant change in self-concept or achievement was found in any subgroup.

8.6.2.1 Interaction Effects : Non-verbal IQ : Study 1

Figure 12 : Cell Mean Profiles :
Non-verbal IQ (Study 1)



As the cell mean profiles demonstrate, there was a tendency for the simple effects of one factor to vary at different levels of the second factor.

Simple main effects were therefore computed to determine where these trends lay.

TABLE 8.40: SIMPLE MAIN EFFECTS NON-VERBAL IQ (STUDY 1)

SOURCE	SS	DF	MS	F-ratio
A AT B1	512.50	1	512.50	3.15
A AT B2	109.36	1	109.36	.67
B AT A1	339.23	1	339.23	2.09
B AT A2	182.56	1	182.56	1.12
ERROR	5855.27	36	162.65	

INTERPRETATION

The above cell mean profiles and simple main effects bore certain similarities to those of Study 3. A slight trend was evident towards improved experimental subjects demonstrating higher Non-verbal IQ scores than non-improved experimental subjects but there was no difference between improved and non-improved control subjects. There was a slight tendency towards higher Non-verbal IQ in improved experimental subjects compared with improved controls and the opposite pattern in non-improved experimental and control subjects. On their own, such trends would not be worthy of mention, but assume some importance because they echo, albeit faintly, the interaction effects of Study 3.

8.6.3 Subject Characteristics : Study 2

TABLE 8.41 : MEANS AND STANDARD DEVIATIONS: SUBJECT CHARACTERISTICS (STUDY 2)

		Improved		Non-improved	
		E1	C1	E1	C1
1.	Age	136.00 (1.83)	135.00 (8.32)	135.11 (4.05)	138.43 (8.94)
2.	Pre-test self-concept	54.80 (18.3)	56.00 (3.7)	52.3 (15.6)	44.30 (8.9)
3.	Pre-test achievement	1.125 (.2)	.870 (.2)	.990 (.1)	.930 (.3)
4.	Verbal IQ	129.5 (9.57)	102.33 (13.37)	114.67 (11.02)	115.29 (10.21)
5.	Non-verbal IQ	129.00 (11.17)	102.83 (11.20)	114.67 (9.84)	115.29 (16.59)
6.	Total IQ	131.00 (9.31)	103.00 (12.26)	113.22 (10.17)	114.71 (15.01)
7.	Children in family	2.3 (.5)	2.3 (.5)	2.2 (.5)	2.3 (.5)
8.	Position in family	2.3 (.5)	1.7 (.5)	1.9 (.9)	1.6 (.5)
9.	Self-concept diff (post minus pre)	1.8 (8.7)	7.25 (7.5)	-1.43 (4.3)	-2.13 (5.2)
10.	Achdiff 1 (post 1 minus pre)	-0.028 (.04)	-0.033 (.04)	0.029 (.1)	0.002 (.07)
11.	Achdiff 2 (post 2 minus pre)	-0.016 (.04)	-0.88 (.09)	0.000 (.06)	0.001 (.07)
12.	Pre-test test anxiety	21.25 (1.5)	20.33 (1.6)	20.33 (3.7)	19.29 (3.0)

TABLE 8.42 : ANOVA SUMMARY TABLE: SUBJECTS CHARACTERISTICS (STUDY 2)

VARIABLE		F-RATIOS		
	A Main Effects	B Main Effects	Interaction	
1	0.22	0.18	0.83	
2	1.86	0.43	0.81	
3	0.23	4.05	1.49	
4	1.03	8.01**	9.54**	
5	0.03	6.25*	6.87*	
6	0.38	7.22*	8.94**	
7	0.02	0.08	0.00	
8	0.64	2.49	0.22	
9	7.99**	0.44	0.80	
10	2.17	0.37	0.20	
11	2.56	1.29	1.21	

df 1,22

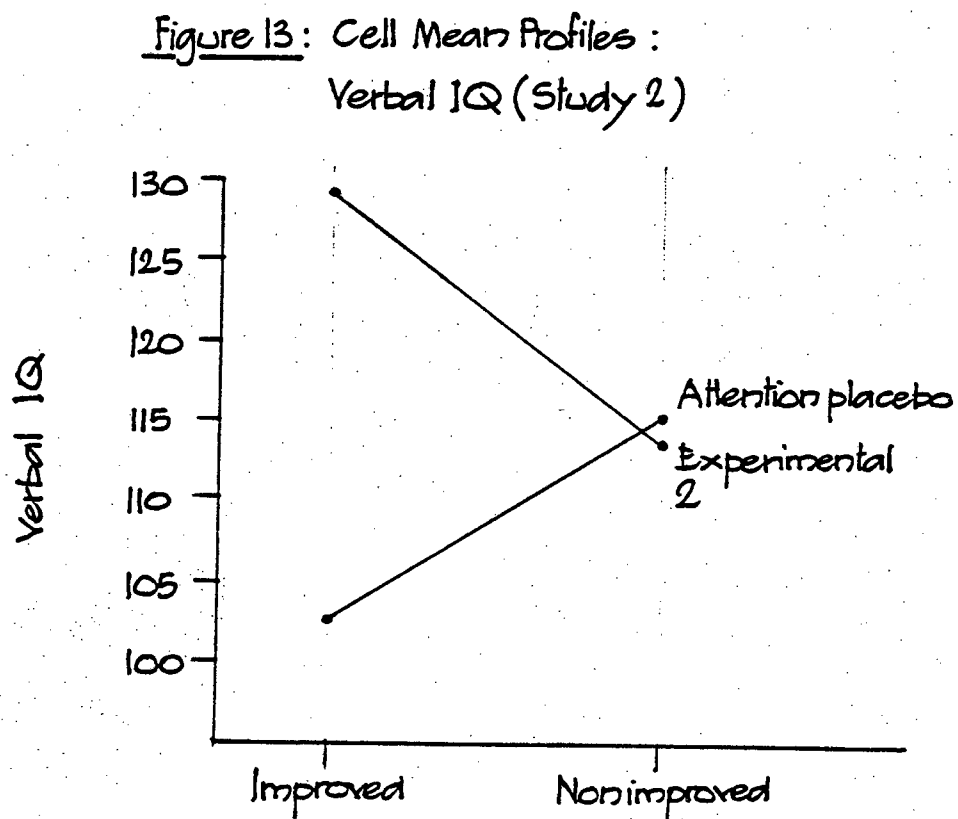
There were no significant main effects nor interaction effects in the variables of age, self-concept or achievement, number of siblings or position in the family. Thus, whether experimental or control, subjects who showed meaningful decline in anxiety did not differ in the above characteristics from those who remained high-test-anxious. Pre-test level of test anxiety was very similar for all groups. As in Studies 1 and 3, there were no significant differences in the proportion of improved/non-improved boys to girls in either the experimental (chi square = 0.15) or control (chi square = 0.003) conditions.

The significant A Main Effect for self-concept change indicated that improved subjects, whether experimental or attention-placebo, manifested significant gains in self-concept at posttest compared to non-improved subjects.

The variables of Verbal, Non-verbal and Total IQ, however, demonstrated marked B main effects and interaction effects. It was apparent that the experimental and attention-placebo groups were not equivalent in IQ, and that the attention-placebo group scored significantly less on both subscales and total scale than the experimental group. As in Study 1, this main effect was the result of random allocation of subjects in each (non-streamed) class to experimental or control conditions, with no attempt being made to control for ability.

The significant interaction effects were analysed further.

8.6.3.1 Interaction effects : Verbal IQ : Study 2



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

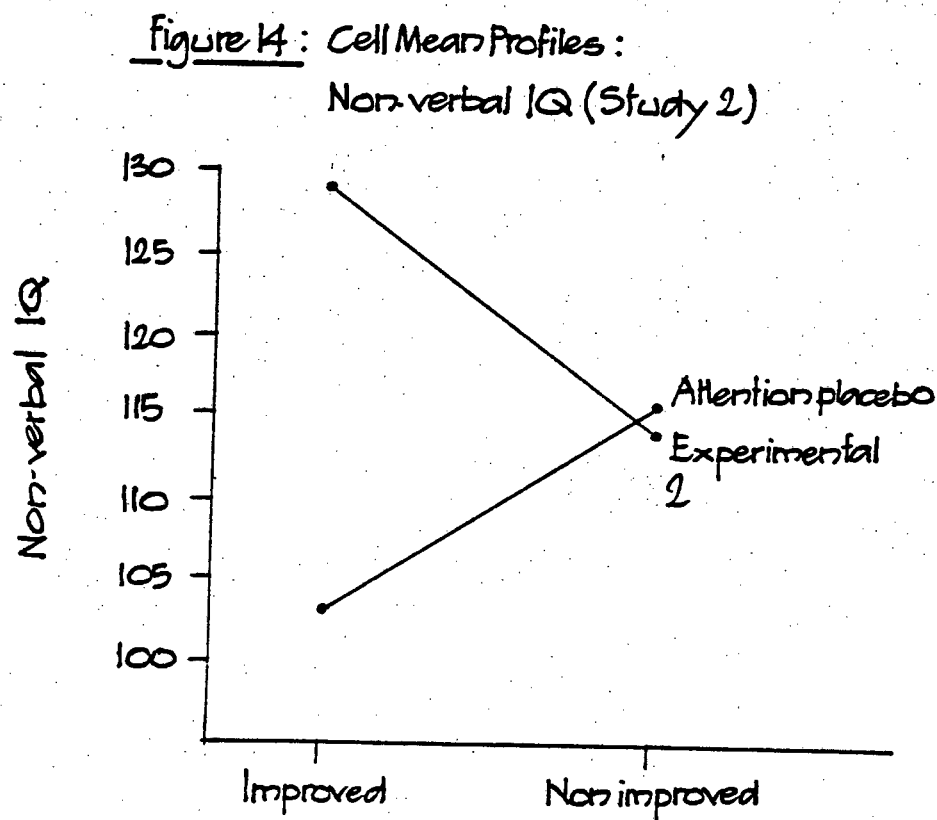
TABLE 8.43: SIMPLE MAIN EFFECTS VERBAL IQ (STUDY 2)

SOURCE	SS	DF	MS	F-ratio
A AT B1	981.88	1	981.88	7.81*
A AT B2	293.42	1	293.42	2.33
B AT A1	1771.70	1	1771.70	14.10**
B AT A2	5.58	1	5.58	.04
ERROR	2765.19	22	125.69	

INTERPRETATION

Improved experimental subjects had significantly higher Verbal IQ's than non-improved experimental subjects ($p < .05$) while there was a non-significant trend in the opposite direction in attention-placebo subjects. There was a very significant difference between the Verbal IQ of improved experimental and attention-placebo subjects, with the former having very much higher scores than the latter ($p < .01$). Non-improved experimental and attention-placebo subjects manifested very much the same mean Verbal IQ scores.

8.6.4.2 Interaction Effects: Non-verbal IQ: Study 2



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

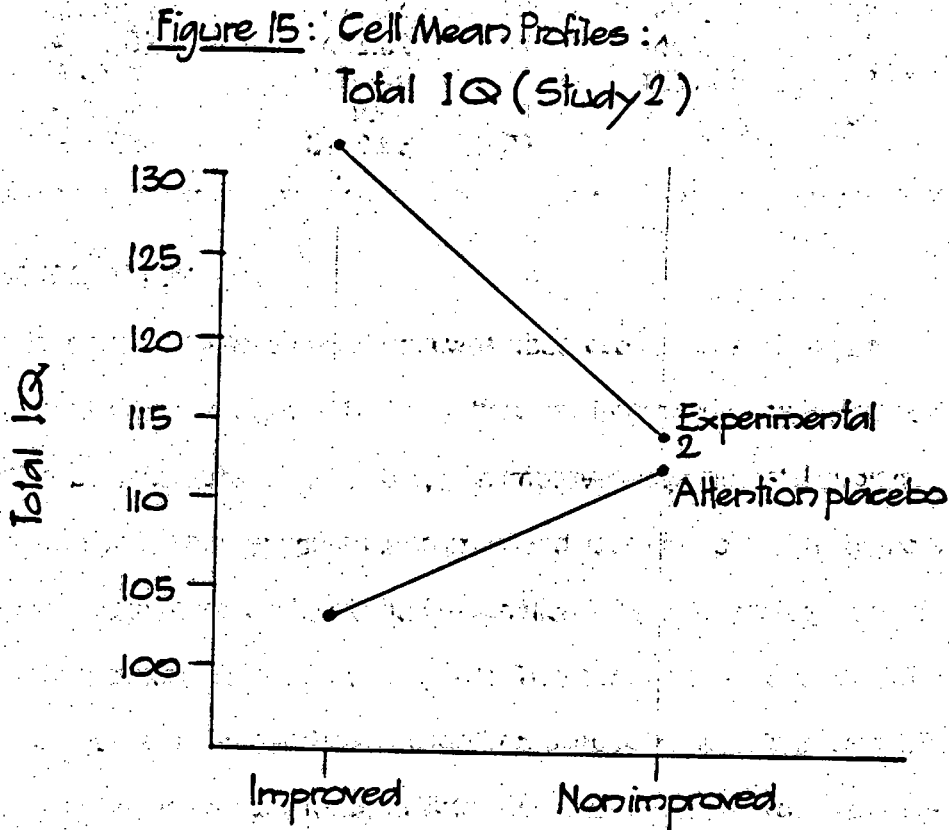
TABLE 8.44: SIMPLE MAIN EFFECTS: NON-VERBAL IQ (STUDY 2)

SOURCE	SS	DF	MS	F-ratio
A AT B1	568.66	1	568.66	3.65
A AT B2	501.58	1	501.58	3.22
B AT A1	1643.69	1	1643.69	10.55**
B AT A2	1.51	1	1.51	.01
ERROR	3426.26	22	155.74	

INTERPRETATION

As with Verbal IQ, the interaction effects were in opposite directions for improved and non-improved experimental and attention-placebo subjects although the only one to reach significance was B at A1, where cell means indicated that experimental improved subjects had significantly higher Non-verbal IQ than attention-placebo improved subjects ($p < .01$).

8.6.4.3 Interaction effects: Total IQ: Study 2



As the cell mean profiles demonstrate, the simple effects of one factor were not the same at different levels of the second factor. Simple main effects were therefore computed.

improved"), whether they were experimental or control subjects. Additionally, there were no differences attributable to sex. Pretest levels of test anxiety were little different, on the whole, between the groups although it was slightly higher in improved subjects.

Similarly, one cannot point to significant differences in level of pre-test self-concept between those who improved and those who did not, although in each study there was a slight trend towards improved subjects having higher initial self-concepts than those who did not improve. Pre-test achievement also failed to discriminate between those who improved markedly, and those who did not, precluding an explanation in terms of past successes.

The only variables which discriminated to any significant degree between improved/non-improved subjects in the two conditions and/or between improved experimental and control subjects, were Verbal, Non-verbal and Total IQ as measured on the New South African Group Test. Very interesting interaction effects emerged which showed up clearly in cell mean profiles of both subscales and Total IQ of Studies 2 and 3, and to some extent in Non-verbal IQ in Study 1, indicating that improved and non-improved experimental and control subjects differed in IQ.

The most marked difference was to be found between improved experimental and control subjects in Studies 2 and 3 where the former were significantly higher in Verbal, Non-verbal and Total IQ than the latter. Improved experimental subjects were also significantly higher in Verbal and Total IQ than non-improved experimental subjects in Study 2, whereas in Study 3 improved

control subjects were significantly lower in Verbal and Total IQ than non-improved control subjects. In Study 1, no significant differences emerged between improved/non-improved in Verbal and Total IQ, but Non-verbal data showed a trend towards a similar pattern, with improved experimental subjects having somewhat higher scores than non-improved experimental subjects.

Taken together, these results indicated a consistent trend towards higher IQ scores in improved experimental subjects than in improved control subjects. A somewhat less consistent tendency existed towards higher IQ scores in improved experimental subjects than in non-improved experimental subjects. Possible reasons for this will be addressed in the following section.

CHAPTER NINE

DESCRIPTIVE DATA AND COMMENT

9.1 CLASSROOM OBSERVATIONS

9.1.1 Descriptive data

Observations in classrooms were undertaken for periods of one day per class. It is apparent that this constitutes an exceedingly small sample of classroom behaviours on which to base any conclusions. It can be argued that the novelty of the presence of the researcher did not have time to wear off, hence behaviours may not have been typical. Nevertheless, these observations provided the researcher with some invaluable insight into daily life in classrooms which could not have been gained in any other way, and which was useful later in conducting the groups with experimental subjects and in informal feedback to, and discussions with, teachers. It has also indicated that classroom observation might be a fruitful field for future research into test anxiety in children.

The purpose of the observations was to compare teacher-child dyadic interactions where pupils were high-test-anxious, and where pupils were not high-anxious and of whom high expectations were held. There were, of course, numerous other interactions occurring which were not the subject of observation. The observer/researcher was blind as to the status of

children, and teachers did not know which children were being observed, nor that their interactions with children were targetted (see 5.4.3 for details of the observational system).

TABLE 9.1 : TEACHER-CHILD DYADIC INTERACTIONS (STUDY 1) CLASS 1

Six High-expectancy and 6 High-anxious pupils were observed. Five of the high-anxious group were rated low-expectancy and one medium-expectancy.

Response Opportunities	Total	Open	Direct	Call-out	Read
High-Anxious	4	1	2	1	-
High-Expectancy	14	10	3	1	-

COMMENT

7 of the 14 Response Opportunities given to High-Expectancy (HE) pupils (5 open, 1 direct, and 1 call-out) were to a single pupil (a girl), who thus received a disproportionate amount of attention. Three of the opportunities given to High-Anxious (HA) pupils were likewise given to one pupil, also a girl, who was the only child for whom low expectancies were not held. Teacher feedback from this teacher (male) was simple, factual and non-personalised e.g. "right", "no".

Work-related Contacts	Total	Teacher	Child
High-Anxious	2	1	1
High-Expectancy	11	2	9

COMMENT

The single work-related contact to be sought by the 6 HA children was made by the girl referred to above. It is apparent that by far the most work-related contacts were made by High-Expectancy children.

Behavioural Contacts

	Total	Warning	Criticism
High-Anxious	6	5	1
High-Expectancy	1	1	0

COMMENT

Four of the warnings and the criticism made to HA children were to a single boy. The other two warnings were made to the girl referred to above.

Procedural Contacts

	Total	Teacher	Child
High-Anxious	4	1	3
High-Expectancy	4	2	2

TABLE 9.2 : TEACHER-CHILD DYADIC INTERACTIONS (STUDY 1) CLASS 2

Observed: 6 High-Anxious pupils (all of whom were Low-Expectancy and 6 High-Expectancy pupils.

Response Opportunities

	Total	Open	Direct	Call-out	Read
High-Anxious	11	6	3	1	1
High-Expectancy	12	1	10	0	1

COMMENT

4 of the 11 Response Opportunities given to high-anxious pupils (3 open, 1 direct) were given to a single pupil (a boy). More of the response opportunities given by this teacher (female) were direct, and her usual style was to ask around the class, hence pupils had equal opportunities on the whole. She

gave praise in response to correct answers, and amplified the answers she received from both high-anxious and high-expectancy pupils.

Work-related Contacts

	Total	Teacher	Child
High-Anxious	12	7	5
High-Expectancy	12	4	8

Behavioural Contacts

	Total	Warning	Criticism
High-Anxious	11	4	7
High-Expectancy	7	5	2

Procedural Contacts

	Total	Teacher	Child
High-Anxious	1	0	1
High-Expectancy	2	1	1

TABLE 9.3 : TEACHER-CHILD DYADIC INTERACTIONS : (STUDY 1) CLASS 3

Observed: 6 High-Anxious pupils (4 Low-Expectancy, 2 Medium-Expectancy);
6 High-Expectancy pupils.

Response Opportunities

	Total	Open	Direct	Call-out	Read
High-Anxious	12	0	10	0	2
High-Expectancy	12	2	6	1	3

COMMENT

This teacher (female) also used a direct question approach, asking specific children for answers. She gave feedback pleasantly and matter-of-factly, even when it was negative.

Work-related Contacts

	Total	Teacher	Child
High-Anxious	14	6	8
High-Expectancy	17	8	9

COMMENT

Interestingly, this teacher gave more praise and encouragement in work-related contacts to High-Anxious children and more factual, negative feedback to High-Expectancy children.

Behavioural Contacts

	Total	Warning	Criticism
High-Anxious	5	3	2
High-Expectancy	3	3	

COMMENT

Two of the six HA children (both girls) received four of the five behavioural contacts, 3 warnings and 1 criticism. One of these girls later voiced unhappiness in a treatment session about being "picked-on" by the teacher.

Procedural Contacts

	Total	Teacher	Child
High-Anxious	0	0	0
High-Expectancy	2	2	0

9.1.2 Summary and Discussion

Observation of dyadic interaction between teachers and pupils yielded some interesting descriptive data, even when conducted over so short a period. It was apparent that the two female teachers did not discriminate in providing response opportunities between children for whom they held differing expectancies, but there was a suggestion that the male teacher did, albeit unwittingly. The technique of asking open questions did not appear to be helpful to high-anxious children as they seldom either volunteered or were chosen to respond, whereas when direct questions were asked, the favoured mode of the two female teachers, HA and HE children appeared to have been given an equal opportunity. When questions were asked around the class, HA children felt less threatened than when they were singled out. The teachers of Classes 2 and 3 differed on this point, and in subsequent treatment sessions, children complained of being singled out for questions by the teacher of Class 3. The researcher was able to use this in a cognitive restructuring approach, pointing out the advantages of being included in classroom activities and the disadvantages of being left out: something they had not hitherto considered, and which enabled them to reassess the teacher's style. There was no evidence of teacher feedback favouring high expectancy children: in the case of two of the teachers there was no difference, while the third praised high-anxious children more. There was some evidence in all three classes that a few high-anxious children were "difficult" class members, and received a disproportionate number of behavioural interventions.

On the basis of these observations, some diplomatic feedback was given to teachers, encouraging them to give equal opportunities to all children in their class and to use praise and encouragement rather than simple factual responses. The issue of sparing certain children embarrassment by moving on quickly to another child instead of giving a clue or rephrasing the question, a practice that was common to them all, was discussed, and the point made that this behaviour could teach the child that if she waited long enough she would not have to respond, in effect training her not to think out the problem on her own in such situations and reducing her opportunity to develop language and conceptual skills. The researcher suggested that, if this were to be changed, it might be useful to provide the class of pupils with a rationale for this, telling them why it was to their benefit. The degree to which these suggestions were followed is not known.

9.1.3 Effect of Teacher Style on Test Anxiety

The question arises as to whether a teacher's style had any effect upon test anxiety levels, therefore pre and posttest means are given below.

TABLE 9.4 : TEST ANXIETY MEANS AND STANDARD DEVIATIONS: CLASSES 1, 2 AND 3

	Pre	SD	Post	SD
All classes combined	13.24	6.31	9.93	6.24
Class 1 (all pupils)	11.57	6.7	8.46	6.11
Class 2 -ditto-	13.86	5.33	12.93	5.62
Class 3 -ditto-	14.42	6.77	8.13	5.60

	Experimental	Control	Balance
Class 1			
Pre	18.17	18.00	6.88
SD	(4.17)	(4.94)	(3.70)
Post	12.50	13.83	4.88
SD	(5.43)	(5.42)	(3.77)
Class 2			
Pre	17.88	17.5	9.25
SD	(3.31)	(4.04)	(3.28)
Post	13.88	16.88	9.83
SD	(5.22)	(6.16)	(5.22)

	Experimental	Control	Balance
Class 3			
Pre	20.00	20.00	9.80
SD	(3.69)	(4.56)	(3.5)
Post	10.5	13.83	4.09
SD	(4.46)	(6.62)	(2.8)

In attempting to detect any trends, it must be remembered that, although all classes received pre-testing at the same time, in February, the time of post-testing was confounded with class membership, with Class 3 and

half of Class 2 receiving intervention in April/May and post-testing in July, whereas Class 1 and the remaining half of Class 2 received intervention in August/September and post-testing in October. Time of intervention/post-testing was entered as a factor in the ANOVAS as a way of controlling for it, and while its effect did not emerge as significant, it nevertheless did have some effect (F calculated $F = 3.77$: F critical = 4.11).

Class 3 showed the greatest decline from pre- to posttest, a trend that was evident in all 3 groups. Three explanations, operating together, may be offered for this: (1) as stated in the preceeding paragraph, it was the only class where all pupils were post-tested in July when end-of-year exams were further away and, possibly, certain cues implicit in the reappearance of the researcher to conduct post-testing might have operated more powerfully at that time upon non-identified controls and the balance of the class due to the closer proximity of pre- and post-testing; (2) it had the highest mean pre-test test anxiety of the three classes (for no detectable reason) so that some of the decline might be accounted for by regression effects; (3) the teacher of this class appeared to demonstrate no differences in her interaction with high and low test-anxious pupils, and used teaching techniques which might have helped them.

Class 2 showed the least change. This cannot be attributed to the time post-testing occurred, as half the class received post-testing at each of the two times. It might be attributable to the reputation this class gained amongst staff as being "difficult", indicating a degree of negative

pupil/teacher interaction. Also, although their class teacher demonstrated no bias, she was a physical education teacher so spent little time herself with the class, which was taught by several different teachers. The balance of pupils in this class, alone of all the classes, showed no decline.

Class 1, taught by the male teacher who might have inadvertently favoured low-test-anxious children, showed some decline in test anxiety, a little more than Class 2 but not as much as Class 3. It was post-tested towards the end of the year which could account for some of the lack of effect, but it is possible that the teacher's style was a contributory factor. The discussion held with him was late in the year, hence he had little opportunity to utilise suggestions, should he have wished to do so. It was of interest to the researcher that he alone of the three teachers appeared somewhat defensive - a subjective judgement, obviously. This may have been in response to what he perceived as an intrusion by an "outsider": it would be naive to suppose that the presence of a classroom observer (a psychologist, at that) is welcomed equally by all teachers.

Systematic observation was not undertaken for Study 2 as a teacher component was not included in the intervention programme. Although observation was planned for Study 3, various procedural difficulties were encountered so that by the time it would have been possible, it was time for the intervention programme with the children to commence and hence the

status of the children would have been known. The researcher did, however, spend some hours in each classroom on an informal basis.

9.2 COURSES FOR PARENTS

9.2.1 Descriptive Data: Attendance at Parents' Courses

TABLE 9.5: ATTENDANCE AT PARENTS COURSES

	Mother Only	Father Only	Couple	Total
Study 1				
Intake 1 : April/May				
Session 1	2	0	2	6
Session 2	1	2	2	7
Session 3	0	0	5	10
Intake 2 August/Sept				
Session 1	8	1	1	11
Session 2	5	0	2	9
Session 3	4	0	2	8
Study 3				
Session 1	5	0	2	9
Session 2	4	0	3	10
Session 3	2	1	4	11

COMMENT

Study 1: Of the 10 experimental group subjects in Intake 1, 8 came from intact families, 1 lived with an unmarried mother and 1 with a mother who was remarried. Out of a total of 57 possible attendances (number of

parents x 3), 23 were made. Of the 10 experimental subjects in Intake 2, 6 came from intact families, 3 lived with their divorced mothers, and 1 lived with father and stepmother. In this course, 28 of a possible 48 attendances were made.

Study 3: Of the twelve experimental subjects, 1 lived with an unmarried mother and 1 with a divorced mother, and all others came from intact families. Of a possible 66 attendances, 30 only were made although in this study parents had been told that a condition of their child being taken into a treatment group was that they attended the parents' course and all had indicated willingness to attend.

Reasons given for non-attendance in Study 1 were difficulties in obtaining baby-sitters, or being away on business (fathers), while 3 couples did not attend any session and made no excuse for non-attending. One of these couples was undergoing separation at the time. It is noteworthy that in the first and third courses, the number of couples increased over the sessions, whereas in course 2 there were fewer intact families. Excuses offered for non-attendance in Course 3 included financial hardship, a broken leg, and difficulties in baby-sitting arrangements. It was the impression of the researcher, and her colleagues who assisted, that parents enjoyed the sessions, although parents at School B presented as somewhat wary initially : they relaxed when they realised they were in no way being "blamed" for their children's level of test anxiety.

9.2.2 Effects of Attendance at Parents' Groups

Lower pre-test test-anxiety was associated with higher parent attendance in both studies ($r = -0.45 *$ in Study 1 and $r = -0.75 **$ in Study 3). However, attendance was not related to greater reductions in test anxiety, nor gains in self-concept, nor achievement for either Study 1 or Study 3.

TABLE 9.6: CORRELATION MATRIX: PARENTS ATTENDANCE

	Study 1 Parents Att	Study 2 Parents Att
Test anxiety reduction	0.17	0.29
Self-concept gain	0.01	0.00
Achievement gain	0.14	0.04

9.2.3 Comment on Parents' Courses

It would appear from this that the parents' courses were not effective in assisting change in the children of those who attended, possibly because they were much too short to alter entrenched attitudes and behaviours. For example, some weeks after the third course ended, the researcher was appalled to hear from two mothers of the action they had taken following the June examinations when their children did not achieve as well as they had wished. They stopped their children from attending prized extramural activities until "their marks improved" - this in spite of discussion during the course on the dangers of parental pressure. This was

particularly sad in the case of the one child as the activity was his sole talent, furnishing his only positive feedback from peers. The children's examination performance was not unexpected, being little worse than their Standard 3 achievement relative to the standard mean; their problem was possibly attributable to unrealistic parental expectations in light of IQ scores which were several points below the standard mean of 116. Clearly, these parents were in need of individual counselling and feedback on their children's abilities, but this was beyond the researcher's mandate.

9.3 CHILDREN'S GROUPS

9.3.1 Descriptive Data

In view of the lack of detail in the literature concerning which specific factors of school experience lead to increased test anxiety in children, it was of particular interest to obtain from them their own perspective. This was accomplished by initial group discussions in the experimental groups, from which the researcher abstracted common experiences and dimensions of test anxiety to draw up hierarchies (for use in systematic desensitization) and, in Study 3, by the drawing of "icebergs" in which consciously-experienced test anxiety was represented above, and all the contributory factors below the surface of the water.

9.3.1.1 Children's Anxiety-provoking Concerns

In the six experimental groups of Studies 1 and 2, the concerns voiced by children (which formed the basis of hierarchy items) were as follows (from least to most anxiety-provoking):

GROUP 1

1. Tables tests
2. Being laughed at in class
3. Orals
4. Teacher critical or cross
5. Parent critical or cross
6. Thinking of examinations
7. Writing examinations
8. Calling out marks
9. Examination in worst subject (often mathematics)
10. School end-of-term / post-examination reports

GROUP 2

1. Being summoned by teacher/school secretary
2. Thinking of future tests/exams
3. Being laughed at in class
4. Project report-back
5. Orals
6. Just before class tests
7. Reports
8. Doing important examination

9. Teacher critical or cross

10. Teacher phones parents to complain

GROUP 3

1. Teacher asking questions

2. Lying in bed thinking of class test next day

3. Doing sums on the board before the class

4. Class test

5. Teacher marking test

6. Orals/projects

7. Calling out of marks

8. Report arrives home; parents open it

9. Making a mess of an oral and being laughed at

10. Important examination in worst subject

GROUP 4

1. Not enough time to complete project

2. Orals

3. Class test

4. Sudden test

5. Calling out marks

6. Teacher wanting to see parent

7. Being laughed at

8. Angry teacher

9. Report comes home

10. Maths (or worst subject) examination

GROUP 5

1. Thinking of class test the next day
2. Answering questions in class
3. Orals
4. Sudden tests
5. Being laughed at
6. Xhosa orals
7. Angry teacher
8. Just before an examination
9. Writing the worst examination
10. Report comes home

GROUP 6

1. Questions in class
2. Working on the board
3. Class tests
4. Marks being read out
5. Orals
6. Being laughed at
7. Report comes home
8. The night before a big examination
9. Just before a big examination
10. Writing an important examination

Subjects in Study 3 expressed very similar anxieties, but these were not used to draw up a hierarchy as it had been decided that use of a slightly modified version of the hierarchy used by Diefenbacher & Kemper (1974) with such good reported results might yield more conclusive findings. This is a much more homogeneous list, with very gradual progression of items (see Appendix K)

As may be seen, similar concerns were evident in each group. Apart from items concerned specifically with tests and examinations, sensitivity to social-evaluative cues was obvious in items concerning being laughed at, or presenting a project or doing an oral before the class, or public mark-readings. Criticism on the part of teachers or parents was a source of tension, and there was a great deal of discussion in the groups regarding the arrival of reports. The anxiety associated with reports was very evident during the systematic desensitization procedure: subjects reacted as if to an electric shock when the researcher led them in guided imagery as follows:

"You are in your garden at home.....it's the holidays and you feel wonderfulno work to do....just swim, relax, phone your friends....you're deciding what to do when you see the postman cycle up the drive....and you remember he might have your report."

9.3.2 Patterns of Test Anxiety in Children

Which aspects of the above items most troubled them varied according to their level of academic achievement. Although initially the researcher had been blind as to this, it became obvious during group discussions over the six weeks of the treatment period, and appeared to underlie certain patterns of anxiety: children who were of superior achievement were often highly competitive, setting themselves high goals, much like the stereotypic A-type personality, so that their anxiety lay in wanting to be among the top achievers. Others were competent but lazy children (often involved in surfing) who became anxious during tests and examinations because they had not done their work properly (the researcher assured them that this was justifiable anxiety, reduction of which was NOT the object of treatment!). Children who were below the mean of the standard appeared to suffer from more typical test anxiety, as portrayed in the literature, composed of a constellation of defeatist attitudes and worries, and frequently complained of unrealistic expectations on the part of their parents, while those who were considerably below their peers manifested intense anxiety which can be considered as realistic in light of the practice of schools to fail children who do not reach a certain standard at the end of the year.

9.3.3 Test-Anxious Children's Drawings

Interesting confirmation of the above typology emerged from children's drawings in Study 3. After group discussion of factors that aroused test

anxiety, subjects in the two experimental groups were asked to draw an iceberg to show their conscious experience of test anxiety above the surface of the water, and whichever factors they felt were causing their anxiety compartmentalised under the surface. The drawings of 10 of the 12 subjects (5 from each group) are reproduced in Appendix L although unfortunately not in colour. The other two drawings were not handed in. Information next to each drawing gives the class membership, sex, the Total IQ score, test anxiety pre- and posttest scores, and self-concept pretest scores of the artist.

It is evident that children in the two groups focussed similarly on social-evaluative factors: all children drew compartments labelled "other children" while nine of the ten included "teachers" and "parents" and three mentioned siblings. The number of compartments thus labelled far outnumbered any other category, accounting for a total of 49 out of 103 compartments (there was an average of 10 compartments to each child's iceberg). Differences emerged, however, in that four of the five children from Class A (the high mathematical aptitude class) included a compartment labelled "own expectations" or "wanting to do well", while none of those from Class B did so, indicating that the former were inclined to set themselves high goals. Class A subjects were also more concerned with not having done enough studying, or not remembering, or not listening (21% of their compartments), while Class B included such concerns in only 12% of theirs. Concern with marks showed a difference, too, for while all ten subjects showed such concern, only amongst Class A subjects was there a concern for both good and bad marks, which again could be taken as indicating high goal-

setting. The most striking differences were demonstrated, however, with regard to self-derogation. All five Class B subjects drew a compartment labelled "stupid" while no Class A subject did so. Moreover, 4 of the 5 Class B subjects mentioned "failing" whereas only 1 of Class A did so, and that was in a remote context: "failure in Std 7,8 10" (this subject also referred to a concern in regard to future jobs).

The drawings thus appear to indicate a more competitive and self-motivated approach on the part of high-ability test-anxious children, who, although highly sensitive to social-evaluative cues, did not appear to feel inferior to their peers. They also seemed (in common with the "mastery" children described by Dweck, referred to in Chapter 1 of this thesis), to attribute anxiety to factors which were within their control, such as not doing enough studying. In contrast, lower ability children felt inadequate and "stupid", a factor which is not amenable to change - similar to Dweck's "helpless" children.

In assessing these drawings it should be born in mind that they were executed in a group setting, so that group influences were at work. Thus, common patterns may have emerged with more strength than they would otherwise have done. Nevertheless, the children were by no means slavish followers, and an intrinsic individuality is apparent among the drawings, so that some credence may be given to the commonalities.

CHAPTER TEN

DISCUSSION

10.1 SUMMARY OF FINDINGS

As is evident, statistical analysis of the variables of test anxiety, self-concept and achievement did not offer unequivocal support for the experimental hypotheses.

In Study 1 at School A (1985), it had been hypothesised that E1 subjects who received the contextualized treatment package, which included components for parents and teachers, would show significant reductions in test anxiety, gains in self-concept, and no decline in achievement at posttest, while non-treated, non-identified controls (C1) would demonstrate no such changes in test anxiety and self-concept, and a decline in achievement. Results showed that the greatest within-group reduction in test anxiety did occur in E1 subjects, but as C1 subjects also dropped in level of this variable, no between-group difference was apparent. Further, there were significant gains in self-concept in both E1 and C1 subjects with neither group showing greater gains. Neither group showed any significant change in achievement at either posttest period, although a non-significant decline was apparent overall.

It had been hypothesized that there would be less effect of treatment in Study 2, at School B (1985), where a non-contextualized programme involving children only was compared with an attention-placebo control condition. Thus, some within-group reduction in test anxiety had been hypothesized for both experimental (E2) and attention-placebo (A-P) subjects, with no between-group change. This was supported by the results. Some gains in self-concept, but not in achievement, had been predicted for both groups; results indicated that a slight gain in self-concept occurred in attention-placebo controls who were treated in April, but not those treated in September, nor in experimental subjects at either time. A slight decline in achievement was evident for all subjects, but did not reach significance.

The most interesting results emerged from the third of the complementary studies, Study 3 at School B (1986), where a comparison of subjects who differed in mathematical aptitude was possible as a result of streaming on this variable, the experimental group (E3) receiving an improved version of the contextualized treatment programme and the controls remaining non-identified and receiving no treatment (C3). The experimental hypothesis was that subjects from Class A (above-average in mathematics) would display lower pretest levels of test anxiety, higher pretest self-concepts and higher pretest achievement than subjects from Class B (below-average in mathematics). Those receiving treatment from either class were expected to show posttest reductions in test anxiety, gains in self-concept and improvement in examination performance. Control subjects of either class were not expected to show changes.

The expected initial differences between classes were found at pre-testing, confirming that mathematical aptitude was related to more general academic aptitude and more positive self-concept. Post-testing on the three variables indicated no changes in self-concept or achievement but an interaction effect in test anxiety: Class A subjects (the more able) who received treatment demonstrated a significant reduction in test anxiety, while Class A controls did not, leading to a between-group difference which was in accordance with the experimental hypothesis. However, in Class B subjects (the less able), while there was no significant reduction in test anxiety in subjects who received treatment, there was a decline in level of test anxiety in Class B controls, which, whilst not reaching significance, was sufficient to reduce the original difference between their group and the control group from Class A. Although no significant change occurred in academic achievement, it is of interest that, in common with Studies 1 and 2, a non-significant decline was apparent which, however, appeared to be centred in less academically able subjects.

10.2 DISCUSSION OF TEST ANXIETY RESULTS

This variable showed the most consistent pattern of results, with significant reductions in self-reported test anxiety occurring from pre- to posttest in treated subjects, but as controls also showed reductions,

although to a lesser degree, it is obvious that non-specific effects as well as specific effects of treatment were involved.

There are several non-specific effects which may cause change in self-report instruments, some of which are relevant to all subjects in these studies, others to attention-placebo and experimental subjects only. The following discussion attempts to delineate these, and their relative importance, in assessing which effects might be justifiably attributable to theoretically-relevant treatment.

10.2.1 Non-specific effects applicable to all groups

10.2.1.1 Passage of time and maturation

It is well-documented that the passage of time and maturation may effect changes (Kazdin, 1980). In these studies, adaptation to being in a higher standard is to be expected in some children, for whom the start of a school year brings certain anxieties relating to new teachers and more difficult work, but which, happily, prove to be unfounded as the year passes, with consequent reduction in test anxiety. As pre-testing in these studies took place in February, five weeks after commencement of the school year, with post-testing considerably later, either five or eight months later, this pattern of adaptation could certainly account for some reductions. However, the reverse pattern was just as probable, with the school year proving more daunting than expected for others, thus leading to no change or even a rise in test anxiety especially as post-testing

occurred either after midyear examinations or prior to end-of-year examinations. Time of treatment and post-testing was balanced equally across experimental and control groups so would not have led to differential effects.

10.2.1.2 Practice effects

Familiarity with the instrument and demand characteristics implicit in the testing situation might also explain some change. As all children, whether experimental, control or balance of class, were aware that the researcher was interested in test anxiety, her reappearance to conduct post-testing undoubtedly led to speculation as to how they were expected to respond, with consequent adoption of "subject roles" such as the good, the negativistic, the faithful and the apprehensive (Weber & Cook, 1972). Such effects would not have been the same over groups as cues differed according to whether children were included in groups which received some kind of treatment or pseudotreatment, or simply received pre- and post-testing.

The effect of not being selected as high-test-anxious might, for example, have been considerable in non-identified controls, possibly serving as a misleading signal that they were not anxious (they had no means of knowing how their scores compared to those of others), and thus leading to reductions in test anxiety at posttest which obscured between-group differences which occurred as a result of treatment. There is evidence to suppose that reductions in control subjects would have been much less likely to occur had a wait-list control condition been employed (Allen,

1980). In the latter case, control subjects are aware of their status as high-test-anxious and are subjected to subtle demands to continue to manifest anxiety as a prerequisite for participation in a subsequent treatment programme. This increases the probability of finding significant posttest between-group differences. Most test anxiety outcome research using volunteer subjects has employed the wait-list control condition, thus capitalising on such non-specific effects. Incorporation of non-treated non-participant control groups is recommended by Allen (1980) to provide a check on this interaction between pretest sensitization and contextual reactivity. The finding of non-significant between-group differences in Study 1 and Class B, Study 3, in contrast to the more common outcome finding of between-group differences, might thus be partly due to use of a more stringent control condition.

10.2.1.3 Regression Effects

As a general rule, the more extreme the score, the more likely it is to regress to the mean on retest. Thus, in using as subjects those who scored above the mean on the test anxiety distribution, a tendency to regression was to be expected i.e. a spurious "reduction". However, as subjects in Studies 1 and 2 were stratified and randomly assigned to groups, there is no reason to believe that differential regression occurred across groups in these two studies. In the third study, reductions in 3 Class B control subjects, were, however, most probably due to regression effects as they obtained high pretest scores.

10.2.2 Non-specific Effects applicable only to Attention-placebo and Remedial Groups: Attention and expectancies for change

10.2.2.1 Attention and the researcher's expectancies

The attention-placebo and remedial groups attended sessions of equal number and duration. However, as the researcher conducted them all, it might be that her expectations resulted in qualitatively different interaction, leading to differential rates of anxiety reduction.

Unfortunately, financial constraints made it impossible to employ multiple therapists who were blind to the hypotheses of the study, and balance them across conditions. Subjects indicated equal enjoyment of the sessions, and as the researcher was aware of the danger, she consciously endeavoured to give the same quality of attention to all groups.

The researcher was unable to avoid becoming aware of subjects' academic achievement during group discussions; similarly, in Study 3, it was known from the teachers that the classes were streamed for mathematical ability. Whether this had an effect upon her expectancies, and thus her interaction with subjects, is discussed later in reference to the effect of IQ.

10.2.2.2 Subjects' expectancies

With regard to treatment credibility and the subjects' own expectancies for success in the attention-placebo group, there are indications that such effects were successfully elicited. These subjects showed significant

reductions in just two subscales of the Test Anxiety Scale for Children: Anxiety and Somatic Signs of Anxiety subscales, findings which, it might be argued, were in keeping with such effects, since these subjects had (a) been given the same rationale as the experimental group, i.e. that their sessions were to reduce test anxiety, and (b) were quite probably aware of the relaxation exercises that their fellows in the experimental group were undergoing to reduce the "emotionality" component of test anxiety. It is possible that they assumed that they, too, were meant to show similar changes. The reductions in the attention-placebo group were similar to, but more pronounced than, the restricted changes in the non-identified control group in Study 1, where reductions occurred in Test Anxiety and Remote School Concerns subscales only. This was in contrast to the pattern manifested by groups receiving theoretically-relevant treatment where significant global decreases occurred across three or more subscales.

It must also not be forgotten that the children in the attention-placebo group, as well as experimental group subjects, may have received differential treatment from teachers who were aware of their status as high-test-anxious, and it is possible that some decrease in anxiety in both groups may have resulted from this.

10.2.3 Specific Effects of Treatment

As was evident from the results of the ANOVAS, and the subscale analyses, and the finding that rather more individuals in experimental groups showed

clinically-significant reductions, a greater degree of pre-post reduction in test anxiety occurred in experimental subjects than in attention-placebo and non-identified controls. As already discussed, it appeared that while reductions in non-identified controls and attention-placebo controls were relatively restricted, and could plausibly be accounted for as a response to demand characteristics of the experimental situation, the effects of theoretically-relevant treatment were global in nature, affecting most subscales, and could not be predicted on the basis of course content. This is in accord with several studies showing that both worry and emotionality are reduced in effective treatment, and supports the arguments to this effect made by Deffenbacher (1980) and Arnkoff (1983, 1986), cited earlier in the "Domains of Effectiveness" debate (see 3.3.1 this thesis).

The effect of treatment was possibly less apparent in these studies as a result of the time of post-testing. In most outcome studies, post-testing is undertaken immediately following treatment. However, it was decided in these studies to delay post-testing for 6 weeks after treatment ended (a time some studies have employed follow-up testing) in order that any measured changes should have been relatively enduring.

There was no clear evidence that parental attendance at parents' courses led to greater decreases in test anxiety in their offspring. In Study 3, there were 19 attendances by Class A parents compared with 11 made by Class B parents, but a clinical degree of improvement was not related to parental attendance in either this study or Study 1. There was

also no evidence that feedback to teachers, as in Study 1, had any effect. In any event, if a teacher did follow recommendations, the whole class probably benefitted. Identification of children as test-anxious, and consequent possible change in teacher-child interaction as a result was applicable to experimental and attention-placebo subjects alike so that effects of this were confounded with group membership and could be disentangled. Difficulties were encountered in implementing effective intervention with parents and teachers in these studies, such as ensuring parental attendance and structuring longer periods of classroom observation and more effective teacher feedback. Lack of effect was almost certainly due to these factors and it must regretfully be acknowledged that truly contextual intervention in the school setting remains to be implemented in future research, if ever. It is the opinion of the author that it will be extremely difficult to carry out effectively, given the constraints which operate in this milieu, and as will be discussed under conclusions and recommendations, her experiences in these studies have led her to revise her opinion of the school as being the best place to conduct remedial treatment for test-anxious schoolchildren.

10.2.4 Effects of Streaming

Study 3 shed useful light on the effects of treatment on subjects who had been streamed for mathematical aptitude.

Streaming was an unusual event in this school, but fortuitous in terms of the research as it allowed for comparison between subjects who proved to differ, in addition, on a theoretically-relevant constellation of variables: pretest test anxiety, pretest self-concept, pretest achievement, and IQ. Class A subjects manifested lower pretest test anxiety, and higher pretest self-concept and achievement than Class B subjects. They also differed significantly in level of IQ as measured on a group test in the year of treatment, with Class A subjects obtaining considerably higher scores. An experimental and a control group were drawn from each of the two classes, which resulted in the inclusion of more high-ability subjects than would have been the case had the classes been non-streamed.

The findings were unexpected, indicating different patterns of response in the two experimental groups, and also in the two control groups. Class A subjects displayed the classic outcome pattern of anxiety reduction in the experimental group, with no change in the control group, whereas in Class B subjects, a degree of anxiety reduction was to be found in control subjects only.

This would appear to indicate that, in this study, treatment was effective only in subjects who possessed a relatively high degree of academic competence, IQ and self-concept and whose level of pre-test test anxiety was not extremely high. Non-specific effects, on the other hand, appeared to be restricted to control subjects who possessed a lower degree of academic competence, IQ and self-concept, and a more extreme degree of pre-test test anxiety.

The non-specific effects underlying reductions in Class B controls were very probably regression effects. Evidence of this is that greater change over time also occurred in the balance of Class B compared to the balance of Class A (balance of Class B : pretest mean 22.69, SD 7.39; posttest mean 17.13 SD 10.95. Balance of Class A: pretest mean 13.62 SD 3.58; posttest mean 12.57 SD 6.42). There might, in addition, have been a tendency to regard their non-inclusion in remedial groups as a cue that they were not more anxious than their peers. The lack of change in Class B experimental subjects indicates that, surprisingly, treatment effects prevented the to-be-expected (in light of their control group) regression and/or practice effects.

The lack of change in Class A controls over time indicates that there were no regression effects nor practice effects nor effects of maturation. The lack of regression effects probably reflects their generally lower pretest anxiety, while lack of practice or maturation effects appears to indicate that high-ability subjects were less susceptible to non-specific effects in general. Their constancy between pre-and posttest scores enables the attribution to treatment effects of the decline in anxiety in Class A experimental subjects with greater certainty.

These contrasting effects of treatment can best be understood in context of the meaning that test anxiety had for these disparate groups, and the implications this had for participation in treatment. Kiesler (1966)

earlier argued that we should not impose a "uniformity myth" on test-anxious subjects, an argument reiterated by Meichenbaum (1980) who stressed that different meaning systems might underlie many of the same behaviours and that treatment techniques have failed to deal with the broader personal meaning(s) of evaluation. The contribution this research makes is in providing some supporting evidence in favour of these arguments.

10.2.4.1 The meaning of test anxiety and its implications for treatment outcome in High-Ability Subjects

Drawings made by, and discussions with, this group of children indicated that they were highly susceptible to social-evaluative cues, but more from a desire for excellence than from a fear of failure. They did not appear to be suffer attentional deficits as a result of stereotypical, self-derogational ideation. They enjoyed doing well, were highly competitive, and most set themselves high goals. Although some of them were not high achievers, for the most part they attributed this to lack of effort, and they were confident that they could achieve better results if they chose to try harder. Thus, they resembled the "mastery" children described by Dweck and Wortman (1982).

How much their performance was lowered by test anxiety is a moot point: all but one obtained scores between 120 and 130 on a group IQ test (mean 123.00 SD 6.99 range 110-130). Even if these might have been somewhat higher had their anxiety level been lower, they indicate superior ability, and are such as to lead to favourable assessment in the school context,

with attendant benefits. It could be argued that these children were aware of their superior status as members of the A-stream, although this was not communicated directly: parents and teachers alike will confirm that children from Sub A onwards are aware which group or class is the "top" one, even if disguised.

Clearly, these subjects do not fit the mould of the "typical" test-anxious child whose IQ and achievement performance is held to suffer as a result of debilitating anxiety. However, the pattern of attributes displayed by this group renders it similar to the high-test-anxious, high-achieving college students described by Galassi, Frierson & Sharer (1981) and Brown & Nelson (1983). Such students displayed considerably more facilitating and less debilitating anxiety than those who were high-test-anxious low achievers. They were also more capable of controlling negative cognitions during test situations. Interestingly, too, they did not differ from low-test-anxious high achievers in various study-skills measures and similarly set themselves rigidly high standards, in contrast to high-test-anxious low achievers who lacked study skills and set themselves low standards. Unfortunately, IQ data were not supplied. As a result of Brown & Nelson's findings, Arnkoff (1986) chose to conduct cognitive intervention solely with high-test-anxious high-achievers to control for the effects of such differences. The author is unaware of any study, other than the present Study 3, which has compared the effects of intervention with subjects of differing achievement histories.

In Study 3, significant reduction of anxiety occurred only in Class A experimental subjects. The importance of cognitive ability also emerged in the comparison of clinically-improved and non-improved subjects, where IQ was the only variable to show significant interaction effects.

There are a number of ways that superior cognitive ability might affect therapeutic processes. Firstly, it appears that a certain degree of cognitive development is necessary to understand and benefit from therapy. For example, Ultee, Griffioen & Schellekens (1982) concluded that successful use of imaginal desensitization depended upon such development, based upon their findings that desensitization delivered in vivo was more successful than when imaginal in 5- to 10-year-old children. However, Wells & Vitulano (1984) consider that while this conclusion is logically appealing, its validity is obfuscated by the methodology of the study, and that the study must remain suggestive only. The paucity of outcome studies of other treatment modalities in children, especially of treatment "packages" (Wells & Vitulano were unable to find any reported outcome studies using stress inoculation training with anxious children for their 1984 review), renders it difficult to assess the effect of level of cognitive development on therapeutic outcome. However, the intelligence of the adult patient has long been held to have a bearing on the effectiveness of psychotherapy. Luborsky et al (1971) reviewed 13 studies dealing with IQ and improvement in therapy and found a positive relationship between outcome and intelligence in 10 of these studies, some of which reported significant differences between improved and unimproved groups, while others listed correlations between .24 and .46. On the other

hand, Meltzoff and Kornreich (1970) found that only 7 of 15 studies that they examined showed this relationship. It appears not unreasonable to suppose that, in this study, the use of a relatively sophisticated treatment "package" did, in fact, require a fairly high degree of cognitive ability in 11-year-old subjects.

Another important way that cognitive ability might affect test anxiety therapy outcome is that the content of treatment sessions concerns tests and examinations. It may well be that a certain amount of ability and a reasonably successful past academic history are prerequisites for test anxiety reduction, enabling subjects to more easily relabel somatic signs of arousal as facilitative and normal, and learn to control them, and negative cognitions, in evaluative situations. In this context, it is important to note that the vast majority of test anxiety intervention has been conducted on college students who must all, even the so-called "low achievers", possess certain abilities and have enjoyed past successes, or they would not be at college. This might account for the fairly general finding that virtually any intervention brings about reduction in self-reported test anxiety in college students. In contrast, schoolchildren are a very much more heterogeneous population, which has implications for treatment effectiveness.

Also very probably influenced favourably by high ability were interactions with teachers and parents. Teaching in Class A was able to proceed at a pace which was enjoyable to teachers, and it is possible that these subjects, and the class in general, thereby enjoyed qualitatively

superior interactions as suggested by Brophy & Good (1974). Also, more sessions of the parents' course were attended by Class A parents, which might indicate greater involvement with their children and none reported using punitive behaviour. Morrow and Wilson (1961) found that parents of high achievers gave more praise and approval than did parents of low achievers, a circumstance where the direction of effect is difficult to determine, as it could well be that parents find more to praise and approve of in high-ability offspring, with resultant qualitatively superior interactions.

This raises the issue of whether the quality of the researcher's interaction with Class A experimental subjects might have been superior as a result of her awareness of their A-stream status (she was not in possession of IQ and achievement data until after treatment was completed), thus leading to more successful therapy outcome in this group. This is difficult to determine.

Although treatment session plans were adhered to, there was a considerable amount of discussion and dialogue which obviously differed from group to group. Perhaps because Study 3 groups were relatively homogenous, there was more difference in content of discussion between them, than between the heterogeneous groups in Studies 1 and 2. However, it is not possible, given the nature of the problem, for any therapist to remain unaware of the past achievement history of clients, and if content of discussion varies as a result, it is surely appropriate that it does so. Thus therapist interaction with high-achieving test anxious clients/subjects might well differ from, but not be superior to, therapist interaction with those who are low-achieving.

10.2.4.2 The meaning of test anxiety and its implications for therapy outcome in low-ability subjects

Drawings by, and discussion with these subjects indicated that they were much closer to the classic portrayal of the high-test-anxious child: they feared negative evaluation, worried about poor marks and failure, and called themselves "stupid". They did not appear to have confidence that they could improve the situation by working harder as they tended to attribute their performance to lack of ability.

Although Class B experimental subjects are referred to as "low-ability", it should be noted that this is a relative term as, with the exception of one subject who scored 94, all scored above 100 on a group IQ scale. Nevertheless, all scores were below the standard mean of 116.74, the mean of this group being 108.67 (SD 8.52 range 94-120), and considerably lower than the Class A experimental subjects' mean of 123.00. Even if cognitive and attentional deficits lowered performance in this group to a greater degree than in Class A subjects, so that the gap between them might have been in reality somewhat less, the difference is still likely to have been highly significant in its effect upon academic performance. The topic of what IQ tests measure is fraught with controversy, and it is not the intention of the author to imply that "intelligence" is a clearly defined entity. However, IQ tests do appear to provide a measure of relative abilities on the linguistic, memorization and problem-solving skills prized in our education system, and which heavily influence the ease with which good results may be achieved. Thus, average academic

performance might be achieved with comparatively little effort by Class A subjects, but require very much more effort from Class B subjects. The disproportionate effort required to merely keep on a par with average attainment no doubt accounted in large measure for the discouragement shown by these subjects.

The author has observed that a very high academic standard is set for the present generation of white, middle-class, primary schoolchildren, requiring considerably more time spent doing homework, studying or projects, than was the case even 10 years ago (as the parent of both young adults and primary schoolchildren, she is, perhaps, well-qualified to assess the change). This appears to be related to the rapid increase in specialised knowledge, and the ever-greater competition for university places, both of which have had a ripple effect downwards in the school system. While this places pressure on most children, it is particularly severe on the child who is of average, or below-average, ability in a population where university education is the norm.

Contributing to the stress experienced by Class B subjects appeared to be qualitatively poorer interaction with teachers: three of the six subjects came to Session 4 of their course in a state of distress, having just been publicly warned by their class teacher (despite his knowledge of their high levels of test anxiety) that they were candidates for failure at the end of the year. As none did so, it might be surmised that this was more of an attempt to shock them than a realistic assessment, although the only boy of the three was genuinely weak in certain areas of schoolwork, which

appeared to be a frequent source of aggravation to his teacher. Classroom observation was not undertaken systematically in Study 3, but judging by the children's discussions, there appeared to be considerably more feedback of a negative and personal nature directed towards Class B, than Class A, subjects, indicating that it is low achievement, as indicated by Brophy & Good (1974), rather than high levels of test anxiety, that has the greater negative effect on teacher-pupil interaction. It is not unlikely, however, that the two factors operate synergistically.

Class B experimental subjects also appeared to experience poorer interaction with parents. The child referred to above was also punished by his mother, who withdrew important privileges after receiving the mid-year examination result (and negative report from the teacher), despite her attendance at two sessions of the parents' course and his only marginally poorer Standard 4 than Standard 3 performance (relative to the class mean: .77 as opposed to .78). His general behaviour, both at school and home, was not a source of displeasure. Another child, a girl, was likewise punished because her mid-year examination results did not satisfy her mother, who had also attended the parents' course and been exposed to recommendations to lighten pressure. It was suggested that high-ability test anxious children might enjoy positive interactions with parents because there is more to praise and encourage; similarly, low-ability children appear to receive more censure and pressure, especially in a society which values academic prowess. Considerable evidence exists that parental behaviour may be elicited by qualities in the child from an early age (e.g. Brazelton, 1969).

Perhaps the sequence of events which produces high levels of test anxiety in some low-achievers is that they do not have the ability to match their parents' expectations, hence they receive negative feedback and/or outright punishment for performance which might represent relatively little "slacking", and little praise for results representing considerable effort. They become "helpless" children in Dweck and Wortman's (1980) terminology, who attribute failure - with reason - to lack of ability.

Treatment did not serve to lower test anxiety in Class B experimental subjects. On the contrary, they did not even show the regression effects apparent in their control group. This might have resulted from their pessimistic (vocalised) belief early in the course that treatment would not help them to control test anxiety, their initial expectations thus differing from those held by subjects from Class A. It might also have been that the focus on tests and examinations served to aggravate the condition, or that treatment might not have continued for sufficient length of time necessary to bring about change. They verbalised this on several occasions, saying, "We still need you, Mrs. Baddeley. Please stay for longer." These statements, and their reluctance to admit to reduced anxiety, might, however, have indicated a desire to continue to receive the attention they appeared to enjoy.

In order to obtain some reasonably objective measure of the need for attention, individual follow-up interviews were held later in the year

with subjects of the two groups, and the length of interviews noted.

Standard questions regarding what they remembered of the course, whether they were using the skills taught, and how they expected to perform in their examinations were asked, and interviews lasted as long as the children wished. A marked difference in length was evident, with Class A subjects responding in brief, business-like manner, staying on the point and terminating the interview when questions were completed. In contrast, Class B subjects took much longer in reply, frequently introducing extraneous concerns, and engaging in more personal interaction with the researcher. Their interviews lasted, on average, over twice as long as did those of their Class A counterparts. In general, they also had poorer recall of course activities although both groups reported continued use of relaxation skills. Class B, but not Class A, subjects tended to set themselves unrealistically high goals for the end-of-year examinations. This contrasts with the low standards set by low-achieving test-anxious college students in Brown and Nelson's (1983) study, which might reflect an "older but wiser" population which had learnt from harsh experience.

Also possible, perhaps, is that apparently unchanged levels of self-reported test anxiety in fact concealed a change in the interpretation these children gave to the experience of arousal. Although they remained as aware of arousal as they were formerly, they may have learnt to perceive it in a less negative light, and label it as facilitative. The researcher had frequently stressed that the aim of treatment was not to prevent arousal, but to learn to keep it at comfortable, useful levels.

10.2.5 The effect of IQ on outcome in Studies 1 and 2

Experimental and control groups in these studies were drawn from non-streamed classes, and were thus ostensibly comparable in a number of intrapersonal variables, including IQ, any differences arising from random sampling variation. The effect of IQ on treatment outcome was therefore not readily apparent. However, when clinically-improved and non-improved experimental and control subjects were compared in Studies 1 and 2, IQ emerged as the only variable to show significant interaction effects. As in Study 3, it alone differentiated between improved and non-improved experimental subjects in Study 2, with those who improved obtaining significantly higher IQ scores, while in Study 1 there was a trend towards improved experimental subjects having higher Non-verbal IQ scores than non-improved experimental subjects. Differences were less marked in control groups, but the tendency was for lower IQ scores to be found in improved control subjects.

In view of the heterogeneity of the treatment groups in Studies 1 and 2, content of discussions during treatment sessions was more general than those which occurred in the homogeneous groups in Study 3, where subjects' concerns were very similar.

10.3 EFFECT OF TREATMENT ON ACHIEVEMENT

No changes in achievement were found as a result of treatment, even in the high-ability group which showed clear reductions in test anxiety. This finding is in accord with much of the test anxiety outcome literature, where the record is relatively poor no matter which treatment modalities are employed. This has called into question the idea that test anxiety is a major cause of poor academic performance (Culler & Holahan, 1980; Dendato & Diener, 1986). The present studies lend support to this, indicating that test anxiety appeared to be the result, not cause, of poor academic performance in test-anxious children who were below the mean of their peer group in IQ, while there was evidence to suggest that academic performance below their capabilities in high IQ children was as a result of acknowledged lack of effort, so that test anxiety stemmed from a lack of preparedness. The test anxiety displayed by high-achieving, high IQ, test-anxious children appeared to arise from high levels of competitiveness and desire for excellence, and treatment could therefore not realistically aim for improvement of already excellent performance.

The measure of achievement used in these studies made any change hard to detect, as examination scores are a relatively "remote" measure. It is possible that use of a subtest from an intelligence measure or a reading test might have indicated improved performance, especially had test-taking practice in a similar measure been included, as was the case in Wine's (1970) study. However, the choice of a resistant achievement measure was deliberate as being the only one to be really meaningful in the school context.

Obtaining global achievement scores over a period of three school years provided interesting confirmation of the author's hypothesis (put forward in her Model of the Development of Test Anxiety) that there is a year-by-year decline in the performance of high-test-anxious children. Although not reaching significance in this relatively short period of time, this gradual decline was evident over all three studies, and thus may be viewed as meaningful with rather more confidence than the non-significant findings would appear to indicate. The only subjects who appeared to escape the decline were those of high ability, who, as has been detailed, did not appear to suffer from any deleterious consequences of their particular form of test anxiety.

10.4 EFFECT OF TREATMENT ON SELF-CONCEPT

A remarkable similarity in pretest self-concept means existed in the three studies: 51.33, 51.38 and 51.71 respectively in high-test-anxious subjects compared with the higher means of 61.58, 59.13 and 61.32 in the low-test-anxious balance of classes. No changes in self-concept were elicited by treatment. This was not unexpected as although gains were hoped for, it was known that treatment, even when specifically directed at self-concept, has not yielded much success (Schreier & Kraut, 1973), probably due to its entrenched nature which requires many cues from highly credible sources for significant change to occur (Braun, 1976). As a gain

of some 5 points is usual in posttesting on this self-report instrument, representing non-specific effects (Piers & Harris, 1969), a gain of 4 points such as made across groups in Study 1 is not meaningful. However, where no such gain is made, it is, perhaps, permissible to speculate as to the reason why. Both studies conducted in School B failed to show the expected gain, which may represent some increased stress level particular to this school population such as high levels of competitiveness and parental pressure.

CHAPTER ELEVEN

CONCLUSIONS AND RECOMMENDATIONS

The overriding conclusion reached on the basis of these studies is that a general move beyond the myth of uniformity in the field of test anxiety is essential and overdue. They confirm the importance to therapy outcome of the meaning systems which underlie test anxiety. For too long the search has been for treatment which was equally efficacious for all test anxious persons. Perhaps it is time to acknowledge that this is a futile search, and that a more promising direction is to heed Meichenbaum's (1980) and Brown and Nelson's (1983) directives to tailor treatment to suit subject characteristics.

The present studies suggest further that those cognitive abilities measured by IQ tests are of crucial importance in determining the effect of treatment in white, middle-class schoolchildren. Whilst it would seem that achievement data reliably indicate significant differences in the relatively homogeneous population of college students (Brown & Nelson, 1983; Galassi et al. 1981), it appears that IQ data are more important indicators in the heterogeneous population of schoolchildren.

The degree of reduction in test anxiety brought about by treatment in subjects in these studies was directly related to IQ level. Thus, declines in non-streamed, heterogeneous-for-ability groups (as in Studies 1 and 2)

were mediocre, although there were indications that some meaningful reduction had taken place; no decline occurred in the homogeneous low-ability group in Study 3, whereas the homogeneous high-ability group showed clear improvement. Study 3 is the only study (to the author's knowledge) which has compared the efficacy of a particular treatment in test-anxious subjects who differed widely in ability, and exemplifies the importance to researchers of chance events, as the opportunity to draw groups from homogeneous classes was due to the unusual circumstance of Standard 4 streaming in the school in which the study was conducted. Its usefulness for this research project was considerable, as the results of Study 3 shed new light on the results of Studies 1 and 2, suggesting that similar, but non-apparent, interaction effects had obscured the effects of treatment. An analysis of the characteristics of clinically-improved and non-improved subjects lent support to this supposition, as the only variable in Study 2 to discriminate between those experimental subjects who showed a marked decline in test anxiety, and those who did not, was again IQ, while there was a suggestive trend in this direction, restricted to Non-verbal IQ, in Study 1. This effect was less strong in Study 1 probably as a result of the inclusion of fewer high-ability children in experimental groups.

The three studies thus amplified each other, providing a perspective that would not otherwise have been obtained. Although it was initially a matter of regret to the researcher that she was not able to conduct one large study balanced across schools and classes, it turned out that the three studies provided much more useful information than the single large study

could have done. This is a lesson, perhaps, that although research in the real world has limitations and frustrations, it also has rewards.

The conclusion was reached that, in some test-anxious children, a high level of development has occurred of certain cognitive abilities (such as are tapped in IQ testing) which facilitate positive interactions with parents and teachers, and enable children to attain excellent achievement, or feel that improvements in achievement are within their capabilities. This appears to impart an underlying sense of self-efficacy and self-worth which makes them receptive to treatment. The high-ability child shows a relatively higher pretest self-concept score, a relatively higher pretest achievement score, and a less severe degree of pretest test anxiety than the low-ability child, and these variables are thus also prognostic of a favourable response to treatment but to a lesser extent than IQ.

Such high-ability test-anxious children differ in many respects from the test-anxious child portrayed in the model of the development of test anxiety developed from the literature (Section 1.3). This may be explained by the fact they have not hitherto been the subject of systematic inquiry, as experimental approaches in children have invariably designated as high-test-anxious those scoring in the top quartile of the test anxiety distribution of their heterogeneous school cohort (class or standard), thus representing the extreme. The tendency for extreme levels of test anxiety to be accompanied by lower IQ scores in senior primary schoolchildren (as evidenced by the negative correlation between the two by Standard 3 or 4) therefore ensures that most subjects

selected from this quartile will be low-ability test-anxious children. In the present studies, the negative correlation was reduced by selecting as test-anxious all those above the class mean in test anxiety, thus including some high-ability children from heterogeneous classes, and a whole group of children from the high-ability class in Study 3. The heuristic value of this was considerable, enabling a more comprehensive analysis to be made of test anxiety in children.

Although high-ability test-anxious children have not been included in experimental approaches, it is possible that they have been included inadvertently in some outcome studies of children where no measure of self-reported test anxiety was obtained, but use was made of physiological measures or self-referral (e.g. Barabasz, 1973, 1975; Deffenbacher & Kemper, 1973a and b). In the last of these, although some of the children were reported to be failing, lack of IQ data does not preclude them from having been low-achieving, high-ability pupils.

The low-ability test-anxious child bears a much closer resemblance to the model, appearing to lack a sense of competence or positive self-worth, for whom school- or homework-related interactions with significant others tends to be tense, and whose expenditure of effort to attain "average" marks is disproportionately greater. While such children's IQ scores may be lowered due to high levels of test anxiety, and their cognitive development impaired to some extent over the years, nevertheless it appears unlikely that they would ever have been placed in a "superior" IQ category.

As a result of these studies, the author has come to question her former acceptance of test anxiety as the major aetiological variable in the negative relationship between test anxiety and IQ. She now considers that the child's relative standing on the cluster of cognitive abilities measured by IQ tests plays a more important role than has been recognised in determining the ease or difficulty with which a child adapts to the competitive school culture. If he or she is not fortunate enough to start school with cognitive abilities that place him or her in the "superior" group in the class, and if this is a source of concern to significant others, there is a strong possibility that test anxiety will develop even in children who were not predisposed to be anxious. Once developed, reciprocal effects as detailed in the model may lead to an assortment of deleterious effects.

The finding that treatment was only successful in high-ability test-anxious children raises the possibility that the significant reductions in self-reported test anxiety brought about by virtually any intervention in college students may result from the generally high cognitive abilities found in this preselected population. Perhaps if outcome studies with older subjects were conducted in non-college populations, reductions might be less easy to achieve.

It was not possible to conclude what role the complexity of the multi-component programme played in its failure to bring about reductions in test anxiety in low-ability children, the very group which most needed help. As

discussed, it is possible that only high-ability eleven-year-olds possessed the necessary cognitive development to benefit from it. It appears to be the first time that a such a package has been employed in an outcome study for test-anxious children, and no outcome studies using multi-component packages for other conditions were found in the literature, so that a definitive answer is not yet available.

A consistent finding was that reductions in test anxiety as a result of treatment were global in nature, in contrast to reductions as a result of non-specific effects which tended to be restricted. This finding was made possible by use of the subscales of the TASC, and their use in other outcome studies is recommended. Possibly the global nature of treatment-induced reductions was a reflection of the multicomponent nature of the intervention programme, so that where it was successful, it reduced all or most of the dimensions measured by the TASC. Equally, however, such global reductions instead of reductions in those subscales which might have been expected on theoretical grounds, might rather indicate, in the words of Lazarus and Davison (1971), quoted by Deffenbacher (1980:126), that "techniques may, in fact, prove effective for reasons that do not remotely relate to the theoretical ideas that gave birth to them". Thus, these studies may be taken to support the argument made by Meichenbaum (1980), Deffenbacher (1980) and Arnkoff (1983,1986), that there is little to be gained by designing treatment aimed at producing differential treatment effects.

Changes in performance did not accompany even clinically-meaningful reductions in test anxiety. The intervention programme did not appear to

change the motivation of certain "lazy" high ability test anxious pupils, while other high-anxious high ability pupils did not require changes in achievement so much as assistance in reducing uncomfortably-high levels of arousal. Anxiety-reduction in pupils of relatively average IQ (as in some subjects in Study 1) was likewise not accompanied by achievement gains. A slight, but steady, decrease in achievement was observable across all high-anxious groups except those of high ability. There was otherwise a remarkably unchanged pattern of achievement across the three years in all pupils.

Given that a stringent measure of performance was used, the lack of improvement in that criterion was not altogether unexpected, and echoes many other outcome studies in adults. It lends support to Galassi et al's (1981; 1984) argument that test anxiety is but one factor affecting grades, and that past academic performance is a more important source of variation in examination results. It was, however, disappointing in light of the excellent results in junior high school students and sixth graders, reported by Deffenbacher and Kemper (1974a; 1974b), using systematic desensitization. The significant increase in grade point average they obtained in a group of 11 treated subjects, including four out of five subjects who had been failing, appeared to indicate that systematic desensitization might be more successful in improving performance in children than it had been in adults. When no performance changes resulted in Studies 1 and 2, it was decided to modify procedure in Study 3 to follow more closely that used by Deffenbacher and Kemper, but still no achievement gains resulted. As detailed previously, methodological shortcomings, such as no measure of test anxiety nor of intellectual ability, render it difficult to interpret the Deffenbacher & Kemper

findings. The rarity of such gains in grade average as a result of systematic desensitization, however, leads one to conclude that possibly factors outside treatment may have played a part in bringing them about.

The findings of these studies confirm the need to design treatment programmes tailored to suit specific cognitive abilities as suggested by Brown and Nelson (1983) for high-and low-achieving college students. As performance gains would be an important goal of intervention with low-achieving test-anxious students, they considered that this group would require an explicit programmatic focus on effective academic skills, together with specific strategies to control negative internal dialogue and fear of negative evaluation, as well as anxiety reduction techniques. They also considered that performance increments in this group might only be effected unless their grade standards were raised. Their recommendations for high-achieving test-anxious students were that they be encouraged to focus on more realistic expectations as to what was required to achieve A-grades in order to counter their tendency to feel they had to know everything, while a reduction of "an apparently high fear of negative evaluation" and anxiety-reduction techniques would also be helpful.

Findings concerning the "contents of consciousness" of high-ability test-anxious schoolchildren have relevance to the above, namely, that the fear of negative evaluation in high achievers often includes considerable competitiveness, a factor was not mentioned by Brown and Nelson, but which deserves attention. In addition, although it is perhaps understandable that these authors did not wish to obtain and report IQ data in view of the

controversy which surrounds their use, such data might be very important in setting raised grade standards for low achievers. While Brown and Nelson (1983) considered that low goal-setting contributed to poor achievement, it is possible that such goals were relatively realistic, and to encourage the setting of overambitious goals might be disastrous. In children of low ability in the present studies, it was observed that the tendency was to aim too high, which led to disappointment and reduced self-esteem; they required help in setting attainable goals.

Before making specific recommendations based on the present studies, it is important to point out their shortcomings. As already stated, a single study balanced across schools, classes, teachers, time of intervention, with multiple therapists balanced across conditions, would have been preferable in terms of experimental control. This was not possible, partly because of the exigencies of the school system and partly because of financial constraints. Deductive leaps were therefore required, such as when comparing placebo and no-treatment controls, since no study included all conditions. Also, as the only way for the research to take place was for the researcher to conduct it on her own (with the invaluable back-up of her supervisor), therapist bias was not controlled. Inclusion of a rating scale at the end of each session would have been a useful additional check on this, although ratings made at the end of treatment courses were similar for all treatments and pseudotreatment. Additionally, because each class contained both experimental and control subjects, some of whom were friends, it is possible that some controls knew treatment procedures, possibly even to the extent of copying relaxation techniques.

Although experimental subjects were asked not to talk about treatment sessions, it is not to be expected that all children resisted the temptation to do so.

It was one thing to plan a contextualised programme and quite another to implement it successfully. S.Sarason (1972) pointed out the difficulties of trying to bring about changes in the school culture, and indeed, intervention with teachers proved impossible to conduct as planned due primarily to their time constraints. The lack of a clear role for the researcher within the school system was also a drawback. It proved impossible to determine whether the recommendations made to individual teachers were acted upon, and if they were, they no doubt affected the whole class.

In addition, no observable benefit in anxiety-reduction resulted from parents' groups, although they offered some evidence of negative parental interaction with low-ability test-anxious children, which is in accordance with the model of the development of test anxiety in children (see Section 1.3). Lack of benefit was probably due to difficulties in ensuring attendance, and lack of opportunity for individual counselling, which rendered the effect of this intervention component uneven and unsatisfactory. Thus, the so-called "contextualised" intervention programme cannot be considered to have been significantly different from the non-contextualised programme.

In spite of its shortcomings, it is considered that the present research has implications both for treatment of schoolchildren who are already high-test-anxious, and for prophylactic measures which might be implemented within the school system to the benefit of all.

It would appear that an important prerequisite for designing intervention programmes is to define, clearly, the characteristics of the group they are to be implemented in. From this, goals of treatment may be established.

The children who appear to suffer the most as a result of test anxiety, and are at psychological risk as a result, are those of relatively low ability. For these children, who are discouraged, self-denigrating, lacking in test-taking skills, and over-aware of physiological arousal, it is suggested that the goals of treatment should NOT focus heavily upon achievement gains, certainly not initially. Rather, the ability to relax at will, and development of skills to improve self-efficacy and self-image should be the aims. These children need help in setting more realistic goals in terms of their own development, not pressure to improve relative to their peer group.

While multicomponent programmes appear to be appropriate for high-ability test-anxious children, they do not appear to be suitable for those of less ability. Rather, a sequential approach is to be preferred, as this avoids over-complexity and provides opportunities to consolidate new skills. It would appear that the first sequence might profitably focus on the acquisition of relaxation skills. This might be followed by training in attentional focus

and practice (not imaginal) in such things as presentation of orals and projects in a supportive, non-evaluative atmosphere; then, when the child is beginning to build up confidence in him- or herself, gradual implementation of cognitive restructuring and systematic desensitization might follow. The researcher agrees wholeheartedly with an educational psychologist that the real need in many schoolchildren is for "positive proving experiences" (Normand, 1981), and any treatment programme for low-ability test-anxious children should structure numerous such experiences. It is envisaged that low-ability children will require considerably longer in treatment.

High-ability test-anxious children are similar to test-anxious college students in that they may be high- or low-achievers. If high-achievers, goals of treatment would not be to improve already-excellent performance, but rather to modify incipient Type-A personality traits, and inculcate a more relaxed approach to school concerns and life in general. Thus, treatment might profitably include restructuring of cognitions regarding competitiveness, the meaning of physical arousal, and realistic preparedness for tests and examinations, as well as strategies for anxiety-reduction. On the other hand, high-ability low-achievers appear to be the only group for whom the twin goals of increased academic achievement and reduction of unpleasantly-high arousal levels might be appropriate, and best achieved by addressing motivational issues, priorities, goal-setting (which were not adequately addressed in these studies), and teaching anxiety-reduction strategies.

In view of the need for careful analysis of children's test anxiety, individual therapy might be more effective than group intervention, and it is

recommended that it be carried out elsewhere than the school. Groups bringing together children of similar cognitive development for intervention, or intervention with individuals, may have labelling effects in the school context. The present studies avoided labelling precisely because they were heterogeneous in Studies 1 and 2, and class-related in Study 3, and it appears that school-based research might profitably include some high-status children for this reason. An important advantage to individual therapy, especially for low-ability test-anxious children, is that counselling with parents is facilitated. As has been stated, group programmes for parents of high-test-anxious children do not appear to serve a useful purpose, lacking in the needed specificity.

In addition to the above, it is suggested that implementation of prophylactic measures would be entirely appropriate in the school context, and might be an important area of concern for Health Psychology. These measures would be primarily stress-reducing, with the aim of promoting healthy lifestyles, and be capable of implementation for the most part within the school curricula by teachers themselves, with training and assistance from consultant Health Psychologists. Thus, relaxation techniques might be incorporated into physical education classes for children of all ages, practiced on a regular basis, and recommended for use in all stressful situations both within school and without. An encouraging beginning has been made in the use of school-based relaxation training by health psychologists in a recent study (Ewart, Harris, Iwata, Coates, Bullock & Simon, 1987). These researchers successfully tested the feasibility and effectiveness of the procedure in lowering blood pressure in adolescents. Subjects reportedly enjoyed their training sessions (15 to 20

minutes four days a week for 12 weeks), and were sorry to see them end.

Also advisable would be the promotion of healthy diets, sufficient sleep and regular exercise - factors called "behavioural immunogens" by Matarazzo (1983). These already receive attention in hygiene lessons, but require a more dynamic presentation and rationale. In addition, open discussion of fears and anxieties relating to tests and examinations and the role of positive and negative cognitions would help to address the "worry" component of test anxiety, and could be conducted by guest lecturers during Youth Preparedness lessons at various stages during the primary and senior years. The advantages of such a prophylactic approach would be that no children would be singled out and all would learn techniques that would be of life-long benefit in reducing the risks of stress-related disease and disability.

The present studies indicate with great clarity that the contents of consciousness of both high- and low-ability test-anxious children showed a preoccupation with marks and comparative performance with their peers, although such preoccupation ranges from a desire to maintain already high positions to a preoccupation with failure. The implications of this for educators are considerable. Ideally, external grading practices should cease, and children be assessed in terms of their own past performance and development. As this is unlikely to occur, at the very least communications regarding grades and test results should be a private matter between teacher and pupil: the practice of reading marks aloud to the class was possibly responsible for more reported anguish than any other common practice. With regard to teacher-pupil interaction, there would be merit in making Brophy and Good's (1974) excellent volume more widely known. The difficulties of establishing constructive

contact with overextended teachers in the schools makes it imperative to devise alternative approaches. Probably the most feasible is the utilisation of existing teacher-training and continuing-education programmes, incorporating wherever possible workshops on the nature and effects of test anxiety, and aspects of school life and teacher-behaviour which elicit and/or aggravate it.

In 1964, John Holt wrote of schoolchildren,

"Perhaps they are thrown too early, and too much, into a crowded society of other children, where they have to think, not about the world, but about their position in it." (page 43)

The situation schoolchildren find themselves in today is, if anything, even more competitive. Short of a total reorganization of the westernised school system, the school will continue to be an arena where children face numerous, and often unrelenting, stressors during their formative years. It is therefore essential that we arm them with whatever behavioural immunogens we can muster, and be prepared to deliver specialized, effective assistance to those who falter under the strain.

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APPENDIX A

THE TEST ANXIETY SCALE FOR CHILDREN (TASC)

My name is _____. I'm going to be asking you some questions—questions different from the usual school questions for these are about how you feel and so have no right or wrong answers. First I'll hand out the answer sheets and then I'll tell you more about the questions. . . .

Write your name at the top of the first page, *both your first and your last* names. . . . Also write a B if you're a boy or a G if you're a girl. (For the fourth, fifth, and sixth grades, "Write the name of the school you attended last year and year before last year.")

As I said before, I am going to ask you some questions. No one but myself will see your answers to these questions, not your teacher or your principal or your parents. These questions are different from other questions that you are asked in school. These questions are different because there are no right or wrong answers. You are to listen to each question and then put a circle around either "yes" or "no." These questions are about how you think and feel and, therefore, they have *no* right or wrong answers. People think and feel differently. The person sitting next to you might put a circle around "yes" and you may put a circle around "no." For example, if I asked you this question: "Do you like to play ball?" some of you would put a circle around "yes" and some of you would put it around "no." Your answer depends on how *you* think and feel. These questions are about how you think and feel about school, and about a lot of other things. Remember, listen carefully to each question and answer it "yes" or "no" by deciding how you think and feel. If you don't understand a question, ask me about it.

TEST ANXIETY SCALE FOR CHILDREN

1. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?
2. Do you worry about being promoted, that is, passing from the _____ to the _____ grade at the end of the year?
3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not on you?
5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?
9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?
10. When the teacher is teaching you about reading, do you feel that other children in class understand her better than you?
11. Do you think you worry more about school than other children?
12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?
13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school?
14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?
15. When you are home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?

16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?
18. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?

In the following questions the word "test" is used. What I mean by "test" is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the blackboard. Do you understand what I mean by "test"—it is any time the teacher asks you to do something to find out how much you know.

19. Are you afraid of school tests?
20. Do you worry a lot *before* you take a test?
21. Do you worry a lot *while* you are taking a test?
22. *After* you have taken a test do you worry about how well you did on the test?
23. Do you sometimes dream at night that you did poorly on a test you had in school that day?
24. When you are taking a test, does the hand you write with shake a little?
25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?
26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?
27. Do you wish a lot of times that you didn't worry so much about tests?
28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?
29. While you are taking a test do you usually think you are doing poorly?
30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?

APPENDIX B

DESCRIPTIVE INFORMATION ON FOUR FACTORIALLY DERIVED SUBSCALES OF THE TEST ANXIETY SCALE FOR CHILDREN

Test Anxiety	Remote School Concern	Poor Self-Evaluation	Somatic Signs of Anxiety
25 ^a When the teacher says that she is going to give the class a test, do you become afraid that you will do poor work?	8 ^a When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?	10 ^a When the teacher is teaching you about reading, do you feel that other children in the class understand her better than you?	24 ^a When you are taking a test, does the hand you write with shake a little?
20 ^a Do you worry a lot before you take a test?	32 ^a Do you sometimes dream at night about school?	7 ^a When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?	9 ^a When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?
19 ^a Are you afraid of tests in school?	31 ^a When you are at home, do you think about your school work?	14 ^a Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?	16 ^a When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
29 ^a While you are taking a test do you usually think you are doing poor work?	18 ^a Do you sometimes dream at night that the teacher is angry because you do not know your work?	4 ^a When the teacher says that she is going to call upon some boys and girls to answer arithmetic problems out loud, do you hope that she will call upon someone else and not on you?	28 ^a When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?
23 Do you sometimes dream at night that you did poor work on a test you had in school that day?	23 Do you sometimes dream at night that you did poor work on a test you had in school that day?		6 ^a When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
28 When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?	22 ^a After you have taken a test do you worry about how well you did on the test?		
21 Do you worry a lot while you are taking a test?	30 While you are on your way to school, do you sometimes worry that the teacher may give the class a test?	15 When you are at home and you are thinking about your reading group for the next day, do you worry that you will do poor work?	17 ^a If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?
15 When you are at home and you are thinking about your reading group for the next day, do you worry that you will do poor work?		12 When you are at home and you are thinking about your arithmetic work for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?	21 Do you worry a lot while you are taking a test?
12 When you are at home and you are thinking about your arithmetic work for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?			
30 While you are on your way to school, do you sometimes worry that the teacher may give the class a test?			
$M = 2.253$ $SD = 2.427$ Range = 0-10	$M = 3.241$ $SD = 1.715$ Range = 0-7	$M = 1.717$ $SD = 1.515$ Range = 0-6	$M = 2.633$ $SD = 1.933$ Range = 0-7

Note. For the Sarason TASC (30 items), $M = 10.173$, $SD = 5.889$, Range = 0-30.

^a Item appears on only one index.

APPENDIX C

PUPIL ASSESSMENT : 1985

School :

Standard :

Name of pupil :

1. What standard of academic achievement do you expect from this pupil during the course of 1985?

Above 75%

☐

60 - 75%

☐

Below 60%

☐

2. On what do you base this assessment? Tick as many as are relevant.

Personal classroom interaction

☐

Test data :

IQ

Achievement

☐
☐

Teachers comments : written

verbal

☐
☐

Knowledge of family and/or siblings

☐

Other (please specify)

☐

APPENDIX D

SPECIMEN CODING SHEETS FOR CLASSROOM OBSERVATION

APPENDIX E

MULTICOMPONENT PACKAGE FOR CHILDREN (1985)

SESSION ONE

1.1 Introduction exercise (adapted from Harper, 1978)

Each group member was asked to write down his or her name on a piece of paper, and then write the name in reverse. Then, pretending it was a word from a new, extra-terrestrial language, practice rolling it around and pronouncing it. These words, they were told, were the names of amazing creatures such as have never been seen on Earth. They were given sheets of paper and asked to write a short dictionary description of "their" creature, what it did and ate, and draw a picture of it. Each child then presented his or her creature to the rest of the group.

1.2 Presentation of Aim of Course

The children were told that the aim of the course was to help each to feel less anxiety during tests and examinations and improve study methods to help them to do the best they possibly could.

1.3 Review of most recent test situation

A discussion was initiated regarding the feelings and thoughts each child experienced before, during and after the most recent test situation. A list was written up on the board for each child under two headings: thoughts and feelings. Attention was drawn to common patterns.

1.4 Fears during earlier years

They were asked whether they had had any fears e.g. of dogs, or the dark, when they were younger. It was pointed out how these were outgrown and that coping mechanisms had been developed for many situations that they used to find alarming.

1.5 Presentation of Treatment Rationale

The children were told that the difference between anxious and non-anxious pupils that could lead to different performance in tests and examinations lay in what they did and thought in those situations: the non-anxious child concentrated fully on the task at hand, whereas the high-anxious child tended to worry about doing badly, and what his parents and teachers would say, (their actual worry thoughts from 1.3 were used) - all of which were irrelevant to the test situation and what needed to be done, and hence caused impaired performance through distraction.

Also pointed out was that the arousal component of test anxiety included a variety of physical symptoms (again, actual examples used from 1.3). They were told that these did not interfere directly with examination performance, indeed, were a sign that useful energy was being made available, but that if they were attended to, as high-anxious children tended to do, they again took away attention from the task on hand.

They were told that treatment would help them to identify their own patterns of "worry thoughts", and work out ways to turn them off. Additionally, they would learn how to relax, and remain relaxed, even during test and examination times that used to make them very anxious. This would help them to do their best in evaluative situations. In addition, they would be encouraged to develop improved methods of studying, which would help them to improve their test performance.

1.6 Introduction to Relaxation

Children were told to sit comfortably in their chairs, arms loosely by their sides, eyes closed. They were then instructed to alternately tense and relax four major muscle groups following Koeppen's (1974) training script for children which utilises fantasy as an aid. Abbreviated instructions are given below to give a general idea; the full text is available in Koeppen's paper.

(a) Hands and Arms

Squeeze an imaginary lemon as hard as possible and then drop it and notice the difference...

(b) Arms and Shoulders

Pretend to be a big lazy cat by stretching the arms above the head and then dropping them.....

(c) Arms and Shoulders

Pretend to be a turtle pulling its head into its shell in response to danger and then coming out and basking in the sun.....

(d) Jaw

Imagine you are biting down on a huge, hard piece of bubblegum.....then stop chewing and relax....

Number of repetitions, timing and pacing were adapted for each group as suggested by Koeppen.

1.7 Homework Assignment

Children were told that during the next week they were to become "mini-scientists", investigating and observing what they actually thought, felt and did during tests. It was pointed out that during the session they had been remembering, and memories are not always accurate. Each child received the hand-out "Homework: Session One" to complete during the week, and the group was instructed how to complete it.

SESSION ONE

HOMEWORK ASSIGNMENT

Appendix E 4

What happened	What you felt	What you thought	What you did

SESSION TWO

2.1 Introductory discussion

This included a brief review of Session One, a restatement of the rationale, and report back on homework. Notes kept on blackboard.

2.2 Construction of Hierarchy

It was pointed out that anxiety was not an "all-or-nothing" phenomenon, and that certain situations were extremely stressful, whereas others were only moderately, or mildly anxiety-provoking.

Elicited from the group what they felt to be mildly, moderately and extremely anxiety provoking. A list was drawn up (by consensus) from least to most stressful.

2.3 Relaxation Training

The first four muscle groups were alternately tensed and relaxed and a further four added:

(e) Face and Nose

Imagine a fly has landed on your nose..try to get it off without using your hands, wrinkle up your nose as much as you can....then relax

(f) Stomach

Imagine you are lying in the grass when a baby elephant comes along and is about to step on your stomach.....you don't have time to get out of the way so tense your stomach muscles as hard as you can.....he's going the other way.....so relax...

(g) Hips and Buttocks

You are squeezing through a very narrow gap in a splintery wooden fence.....make yourself as thin as you can.....now you're through so you can relax...

(h) Legs and Feet

You are standing barefoot in a squishy mud puddle....push your feet down to touch the bottom and feel the mud squeeze up between your toes....now step out and relax your feet....

Again, timing, pacing and repetitions were adapted to the needs of group. When the whole set of exercises was completed, children were encouraged to remain relaxed and visualise themselves lying in a "special place" such as the beach, or under some trees in the grass...what did they feel, see, hear? Tape played of the Largo from Winter (The Four Seasons) by Vivaldi (3 mins). The researcher then counted backwards from 5 to 1, the children having been told to open their eyes on the count of 1, feeling alert, refreshed and relaxed.

2.4 Social Stimuli

Christensen (1974) considered that attention to social stimuli of an evaluative nature was an important component of treatment for test anxiety. Therefore the children were introduced to the concept of what social stimuli are: what people around us look like, and what they do and say, that affects us. Photographs of a man demonstrating nine facial expressions were handed out to the children, who then tried to identify the emotions expressed. Various expressions on the part of significant others, and the responses they provoked, were discussed.

2.5 Homework

In order to alert children to social stimuli in their home and school contexts, they were asked to keep note of them over the subsequent week on the sheet provided.

SOCIAL STIMULI

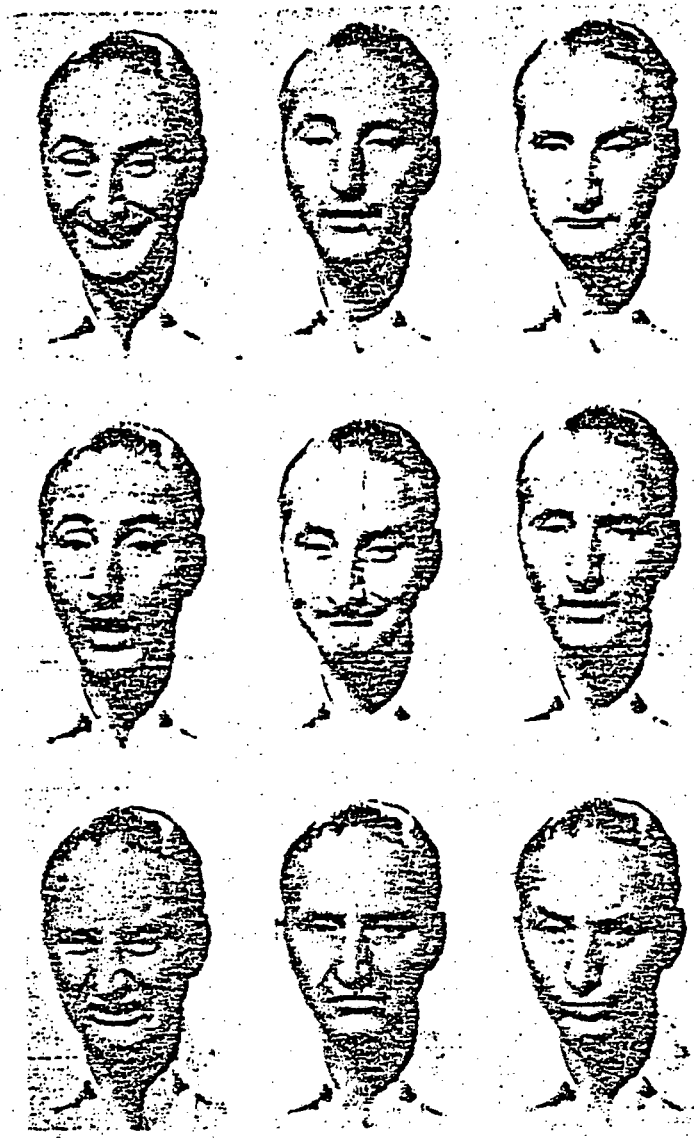


Figure 2-1

Examples of stimuli used in the study of the perception of emotions. The photographs illustrate expressions posed to portray the emotions listed. (You might try to identify them before looking at the key below.)

Top (left to right): glee, passive adoration, complacency. Middle: amazement, optimistic determination, dismay. Bottom: rage, mild repugnance, puzzlement. (From Hastorf et al., 1966.)

What person did:

Person e.g. friend,
teacher, mother:What you felt,
did or said:friendly, smiling,
saying nice things

(a)

(b)

(c)

sad, crying

(a)

(b)

(c)

angry

(a)

(b)

(c)

critical,
disapproving

(a)

(b)

(c)

unresponsive,
indifferent

(a)

(b)

(c)

SESSION THREE

3.1 Introductory Discussion

Recap of Session Two and report back on homework by each group member. Discussion of individual responses to social stimuli.

3.2 Self-defeating thoughts

In discussion, made list on blackboard of common self-defeating thoughts e.g. worrying about performance including comparison to that of others; ruminating over alternate answers; preoccupation with bodily feelings; self-derogation; ruminating about possible negative consequences.

3.3 Thought-stopping and thought substitution

Children were told that negative thoughts could be stopped once one was aware of them, and more helpful thoughts substituted in their place. They were asked to suggest coping self-statements which were discussed and written on the board. Each child was also given a handout ("Thoughts to practice during tests and exams") The process of thought stopping and thought substitution was modelled by the researcher, and they were encouraged to practice aloud.

THOUGHTS TO PRACTICE DURING TESTS AND EXAMS
(based on Meichenbaum & Genest, 1977)

Just look at this question. What does it ask?

Don't look ahead, just take it one step at a time.

I've done lots like this before. Calm down and relax and I'll remember how it goes.

It doesn't matter if I can't do this one right now. I'll try the next ones and come back to this.

There's plenty of time. Stop for a moment and take a few deep breaths.

Forget the others and how they are doing. I'm not going to think about them. I'm going to concentrate on the next question.

This is the anxiety I thought I'd feel. It's a reminder to me to cope.

It's useful to feel a few butterflies in my stomach - means my body is ready to make a real effort.

It's working - I can control how I feel.

Just wait till I tell my group about this!

It's OK to make some mistakes: next time I'll make less. It's getting easier every time I try.

3.4 Start of systematic desensitization

The relaxation exercises were run through until complete relaxation was achieved. A start was then made on pairing imagined situations from each group's hierarchy with relaxation, encouraging the use of coping self-statements. Thus, the image was not stopped if anxiety was experienced, but encouragement was given for the scene to be continued while seeing themselves using coping techniques to restore relaxation. Each group managed three or four hierarchy scenes.

3.5 Homework

The children were asked to practice relaxation exercises and coping self-statements as often as possible in real and imagined situations. They were encouraged to view those relaxation exercises which could be done unobtrusively as their secret. Each was asked to prepare a short report back for the next session (practice for orals in relaxed atmosphere).

SESSION FOUR

4.1 Introductory discussion

Recap of last session. Report back from each group member on uses made of coping techniques. Praise given for efforts.

4.2 Informal discussion of study habits and test-taking skills.

The Study-Habits Questionnaire (Robinson, 1970) formed the basis for this. Questions were worked through with group members with considerable discussion and participation by all. Input on more efficient methods and better study conditions was given. A general discussion of test-taking skills followed.

*Study-Habits Questionnaire*¹

No. correct out of

38 _____

Answer each of these questions by writing in one of the following words (or its number): (1) never, (2) seldom, (3) sometimes, (4) usually, (5) always. A few questions are to be completed by writing in answers as directed.

TIME DISTRIBUTION

- _____ 1. Do you have a plan of work for each day?
- _____ 2. If so, do you stick to it?
- _____ 3. Does your work prevent you from engaging in social activities?
- _____ 4. Do you allow time for exercise?
- _____ 5. Do you get enough sleep?
- _____ 6. Do you have certain hours that you regularly spend talking and in recreation?
- _____ 7. Do you eat at the same hours each day?
- _____ 8. Do you tend to spend too much time on social and recreational activities?
- _____ 9. When you study at night, how long is it usually from the time you close your book until you are in bed? (Indicate the time in minutes.)

ATTITUDES

- _____ 10. Do you feel that you have to spend too much time studying?
- _____ 11. Do you feel that you ought to spend as much time as possible studying?
- _____ 12. Do you get tense and nervous when you study, or worry about your work?
- _____ 13. Do you feel incapable of doing your work?
- _____ 14. Do you try to complete a lesson before allowing interruptions to take place?
- _____ 15. With a four-hour French assignment, would you try to complete it at one sitting rather than at several different times?

WORK HABITS

- _____ 16. Do you study during the time between two classes, say between 9 and 11 o'clock?
- _____ 17. Do you have trouble "settling down to work" at the beginning of a study period?

¹ These questions are adapted from the Study Questionnaire that appears in S. L. Pressey and F. P. Robinson, *Laboratory Workbook in Applied Educational Psychology*, 3d edition, New York, Harper & Row, 1959. Used with permission.

- _____18 When you study, do you frequently get up, walk about, glance at a paper or magazine, or do other things that interrupt your work?
- _____19 Do you daydream in class or when you should be studying?
- _____20 Do you study a given course each weekday in the same place and at the same time?
- _____21 Do you get to class or sit down to study, only to find that you do not have your notebook, pen, textbook, or other materials?
- _____22 Do you get your work in on time?
- _____23 Do you immediately go on to the next lesson when you have completed the one you are working on?

DISTRACTIONS

- _____24 Do you prepare for bed before doing some of your studying?
- _____25 Do you study some of your lessons while in bed or while stretched out on the davenport?
- _____26 Is your room used for many informal meetings during the evening?
- _____27 Is your room near a disturbing source of noise?
- _____28 Do you have pictures or things that you like to look at on or near your study table?
- _____29 Do other people in your study room distract you?
- _____30 Does the temperature of your study room make you feel uncomfortable?
- _____31 Is your studying interrupted by thinking about various personal problems and worries?
- _____32 Is your studying interrupted by thinking about various interesting events in the near future?

MATERIALS

- _____33 Do you have trouble obtaining the materials that you need for study?
- _____34 How much clear table space do you have for study; that is, about how long and how wide is the free space on your desk?

FATIGUE

- _____35 Do you have much glare on your book?
- _____36 Does enough light fall on your book when it is in the position in which you normally have it when you study? (See directions on page 87.)
- _____37 What type of lighting do you have? (a) gooseneck or study lamp, (b) overhead light, (c) indirect lighting, (d) other.
- _____38 Is it generally noisy where you usually study?

The questions whose numbers are followed by periods should be answered "usually" or "always" and those question numbers not followed by periods should be answered "seldom" or "never." The answer to question 9 is "30 minutes or longer." The answer to questions 34 and 37 will be given in the discussion later. There is seldom a paragon, even among good students, who honestly can give the ideal answer to all of these. The items on which your answers differed from the ones you should have given indicate which suggestions in the following discussion will be most pertinent.

4.3 Continuation of Systematic Desensitization

Relaxation induced without going through each exercise. Children instructed to make themselves comfortable, shut eyes and move the attention throughout the body, checking for areas of tension and relaxing them. The Largo from Vivaldi's "Winter" was played. Once children were completely relaxed, next imagined situations from the hierarchy commenced. Any tension experienced during the imagined scene was to be located and relaxed away. Any worry thoughts to be stopped and a coping thought substituted. The self-control of the process was stressed.

SESSION FIVE

5.1 Introductory discussion

Recap of last session and homework. Was there anything they had changed with regard to study habits as a result of the last session? Praise given as appropriate.

5.2 Review of relaxation practice

The use of relaxation was reviewed both at home and in class. Each child was asked to give an illustrative example of how he/she had used it recently and also to run through cue words for each group of muscles e.g. "lemon", "fly", "Baby elephant" "mud puddle" etc. In addition, each child described his/her "special place".

5.3 Continuation of systematic desensitization

Next hierarchy scenes commenced with use of coping imagery. Most groups completed the hierarchy this session. Experiences discussed.

5.4 Homework

The children were encouraged to continue to apply what they had learnt in real life and imagined situations.

SESSION SIX

6.1 Introductory discussion

Feedback on real life applications made by children and practice of relaxation and imagery. Praise given.

6.2 Final review of course

Brief recap of each session, eliciting from the children what they remembered best. By this stage they should have learnt to:

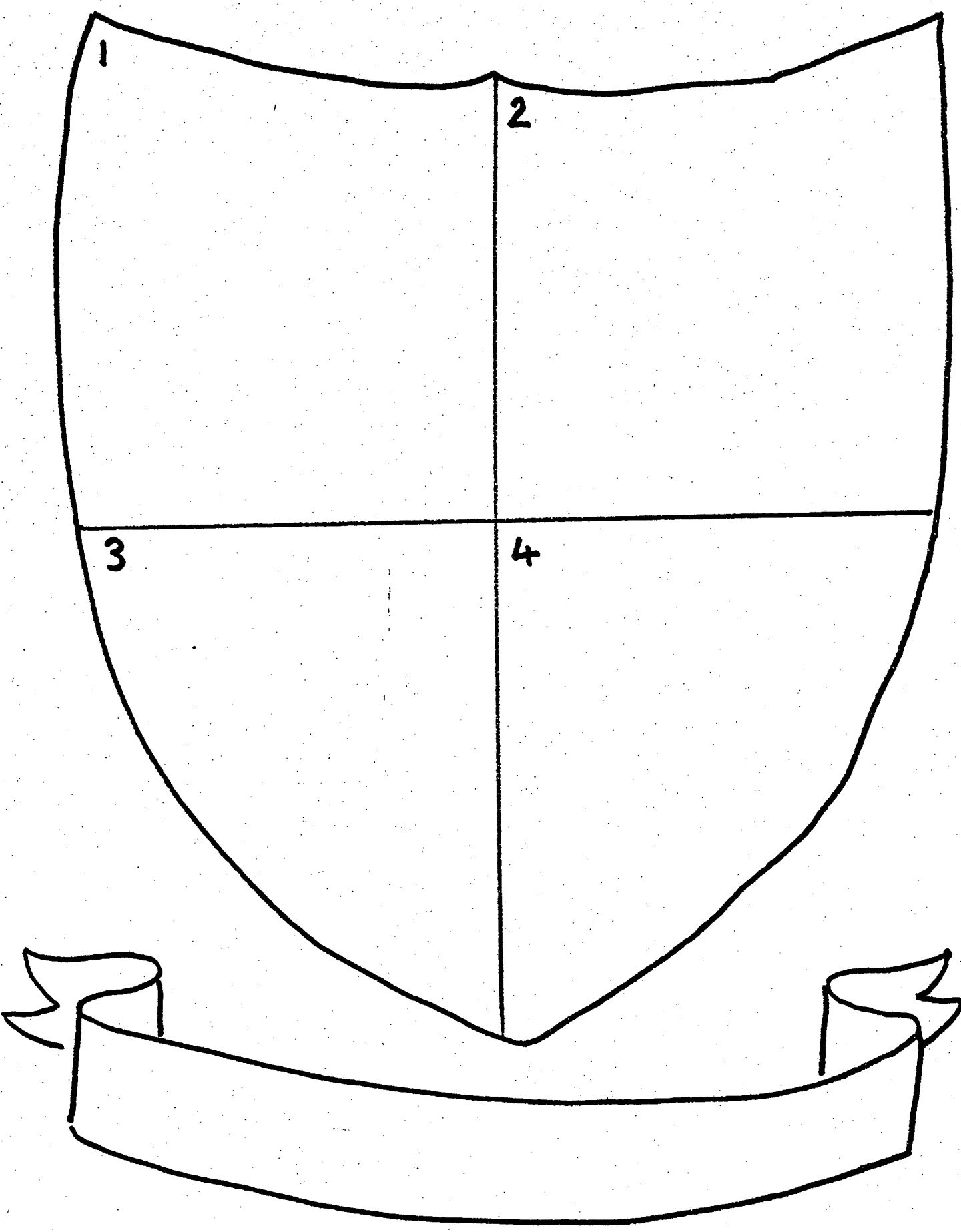
- (a) Identify physical feelings and thoughts that accompany high levels of test anxiety.
- (b) Know that feelings are nothing to worry about and can be controlled by breathing and relaxation exercises.
- (c) Know that they need to watch out for worry thoughts and stop them, substituting more constructive, attention-focussing thoughts.
- (d) Be capable of relaxing at will.
- (e) Use study times more effectively. Plan ahead for tests and examinations.

1.6.3 Personal Coat of Arms exercise

Each child was given a handout of the empty coat of arms and asked to fill in each quadrant as follows:

- 1: Their greatest success
- 2: Something they'd like to improve
- 3: What they would do if they had one year in which to do whatever they liked and had unlimited funds
- 4: Their most precious possession

Children also were asked to fill in their "life motto" in the relevant place beneath the coat of arms.



6.4 Closure

The children were told that the skills they had learnt in the course were theirs for as long as they chose to use them, and that they would find them useful in many situations, both in school and without. This concluding discussion was kept enthusiastic and positive, and no problem areas were opened up in accordance with suggestions in Wine's (1974) manual.

MULTICOMPONENT PACKAGE FOR CHILDREN (1986)

The format of each session was very similar to those detailed above, with the following modifications:

1. The Physiology of Stress and Relaxation

More detailed attention was paid to physiological arousal, calling it the "stress response" and giving them a cartoon sketch to illustrate it (see below). They were encouraged to view it as facilitative provided it was kept under control, and the body allowed to return to a state of balance. They were told that they would be taught its counterpart, the "relaxation response" (see below) which would help them to control it, and also to restore the body to a state of balance.

What is stress?

Stress is a demand or pressure on us which often makes us feel tense, unhappy or uncomfortable

Writing exams, being ticked off by the teacher, being teased by one's classmates, going to the dentist are examples of things many children find stressful.

Certain changes happen in our bodies when we respond to these situations, and these changes form the 'stress' response

What goes on in our bodies when we are under stress?

The brain becomes aware of danger and releases special 'messages' to various parts of the body

* Blood is diverted to muscles - 'pale with fright!'



Adapted from Browne (undated)

* Mind becomes alert

Less saliva - dry mouth.

* Heart beat speeds up.

* Breathing rate speeds up and air passages in lungs open wider to get air in more quickly.

* Liver releases sugar for quick energy.

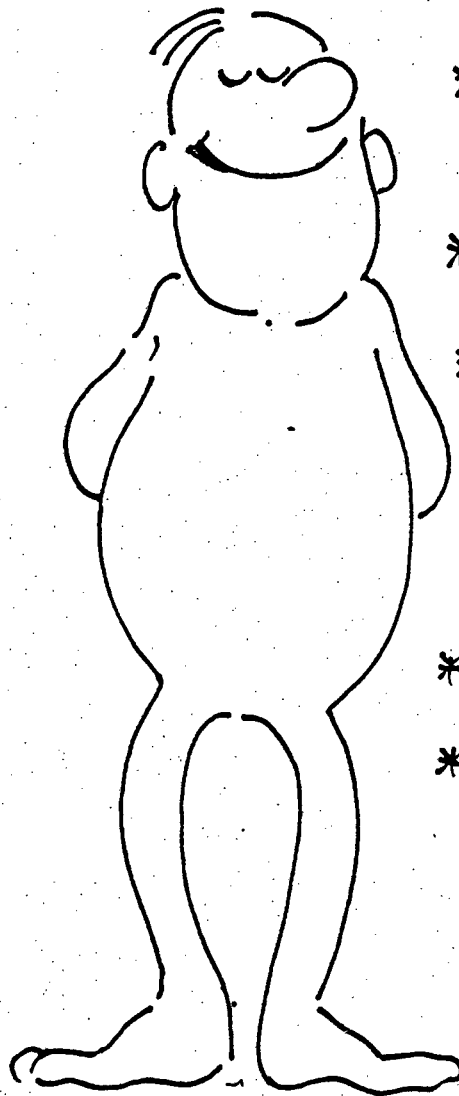
* Muscles tense - ready for action.

* Sweating increases to cool the body.


What is relaxation?

Relaxation is a way of producing a quiet body and a calm mind. It counteracts the stress response. Practiced regularly, it helps people to cope better with stressful situations and to lower their general level of tension.

What bodily changes happen when we are relaxed?



- * Mind becomes more tranquil.
- * Heart rate decreases.
- * Breathing rate slows down as less oxygen is needed.
- * Muscles relax.
- * Less sweating occurs.

More than  a cur

Adapted from Browne (undated)

2. Progressive Relaxation

A set of progressive relaxation exercises for the major muscle groups, somewhat shorter and simpler than used for adults, was substituted in place of Knoeppen's procedures for relaxation training. It was used in the group setting exactly as specified for Studies 1 and 2, and was also put on tape. Each child was given a copy of the tape to take home with instructions to practice once daily. The text was as follows:

SIMPLIFIED PROGRESSIVE RELAXATION

Settle yourself comfortably on your chair..... set aside the concerns of the day and allow your mind to grow quiet.....focus on being here and listening to my voice....close your eyes, letting your eyelids rest gently on your eyes.....

Become aware of your breathing.....shallow, regular and relaxed..... in.....out.....in.....out..... imagine the air is like water, flowing in through the soles of your feet....up into every cell of your bodyand ebbing away again.....

Now we are going to do a set of exercises for all the major muscle groups of your body to help you to learn the difference between tension and relaxation.....

First, focus on your hands and forearms....make your hands into fists, clenching them as tightly as you can.....feel the tension.....hold it.....and relax. Let the muscles in your hands and forearms relax more and more....and concentrate on letting go.

Now for your biceps, the muscles in the front of your upper arms. Imagine yourself lifting something heavy in each hand up to your shoulders.....up...feel the tension in your biceps.....Now let your arms fall back to your sides and relax.....notice the difference as your biceps become more and more relaxed.....

And now for the muscles in the back of your upper arms, the triceps. Push your arms out in front of you as hard as you can, as if you were pushing at a wall..... push.....feel the tension....hold it....and relax..... let your arms fall back by your sides, limp, heavy and

completely relaxed. Enjoy the difference.....all the muscles in both arms are fully relaxed.....

Now focus on the muscles in your head and face.....first your forehead. Tense these muscles by raising your eyebrows as high as you can....up....up.... and relax. Notice the difference as your forehead smooths out more and more.....Now screw up your eyes as tightly as you cantight....tight.....and relax.....let the lids of your eyes again rest lightly on your eyes. Relax more and more fully as you enjoy the feeling.....

Now for your jaw muscles. Tense these by biting down firmly and pressing your lips together.....feel the tightness in all the muscles of your jaw and throat. Hold it.....hold it.....and relax. Let go completely and relax....allowing your jaw to drop slightly...and your lips to part.....feel the difference as you relax more and more.....let the muscles unwind and your whole face become smooth and peaceful.....

Now focus on the muscles of your neck. Press your head back as far as possible.....feel the tension all down your neck hold it and relax. Appreciate the difference between tension and relaxation in your neck.

Now for your shoulders. Shrug them up to your ears as high as you can. Feel the tension hold it and let go. Notice how it feels to let go of these muscles..... And again, pull your shoulders up to your ears tight tight and relax. Feel how good it is to relax these muscles more and more completely

Now for the muscles in your chest. Breathe in as deeply as you can and hold it feel the tension in all your chest muscles as you hold that deep breath now relax and breathe out completely again, take shallow, regular breaths in out keeping your chest muscles relaxed, relaxing a little more each time you breathe out

Now focus on your stomach muscles. Imagine you are tensing them to receive a blow make them hard as a rock hold itand relax, letting them go soft and looseFeel the difference between tension and relaxation in your stomach muscles.

Now imagine you are trying to squeeze through a narrow spacepull in your buttocks as tightly as you can ... suck in your stomach and squeeze throughhold the tension and relax noticing the difference.....what a relief to let go ...relax and unwind completely enjoying the feeling of letting go

Lastly the muscles in your legs. Tense your thigh muscles by raising your straight right leg, toes pointing to the ceilinghold it upfeel the tensionand relax, letting it fall back on the floor, limp and relaxed..... Now for your left leg, straighten it, toes pointing to the ceiling, and lift hold it and let it fall to the floor, limp and relaxed notice the difference between tension and relaxation Now point your toes down to tense your calf and foot muscleshold it and relaxlet your legs rest limp, warm and relaxed

Your whole body is now fully, completely relaxedit feels as if you are floating gently in warm waterjust rocking gently no tension ...the water flows around you gently and smoothlyand you are peaceful and completely relaxedenjoy that feeling for the next few moments(tape of Vivaldi's Largo from Winter)

3. Hierarchy Modification

Instead of a hierarchy based on items put forward by each group, the hierarchy used by Deffenbacher and Kemper (1974b) was used (see Appendix K for copy).

4. Procedural Modification

In place of Goldfried's (1971) variation of coping with anxiety produced by the imagined situation, relaxing it away without stopping the scene, the classic systematic desensitization procedure (Wolpe, 1958) was used. In this, a child who experienced anxiety during the imagined scene signalled to the researcher and the scene was stopped immediately and only restarted after relaxation had been

restored, the group thus proceeding at the pace of the slowest child. The self-control aspect of the rationale was retained, however, in that children were still told that relaxation was a useful skill which they would be able to use in varied, real-life situations.

5. Iceberg Exercise

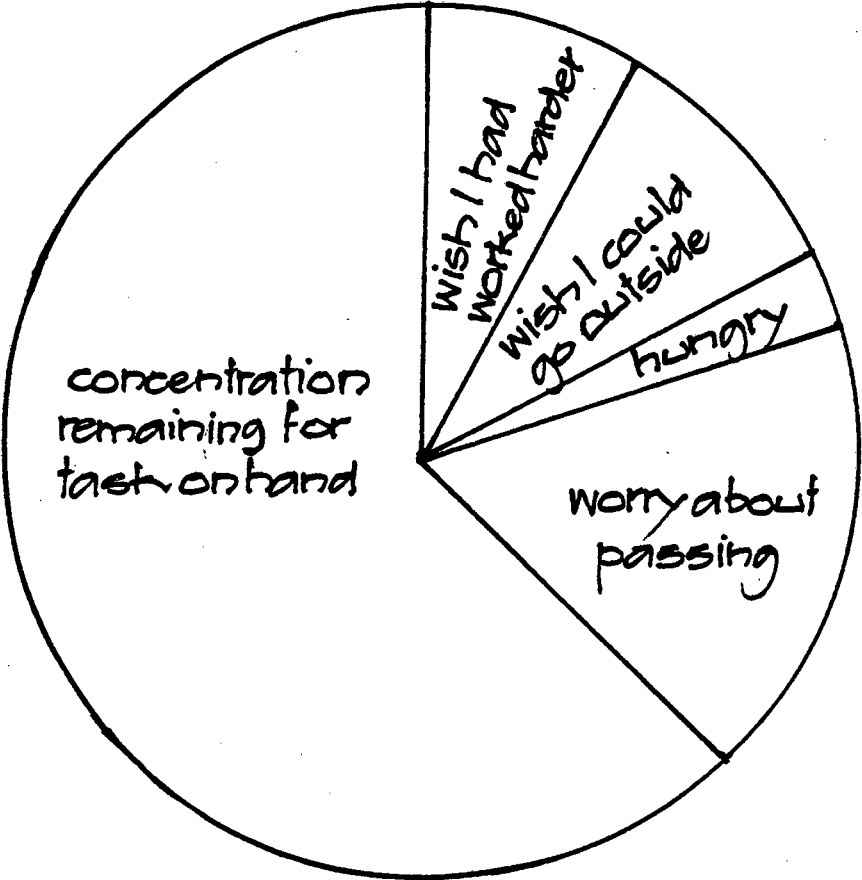
This was added to Session Two in place of the Social Stimuli exercise which proved too advanced for this age-group. Children were asked what they knew about icebergs, and they were quick to state that nine-tenths of it lay beneath the surface of the sea. They were told to imagine their test anxiety as the part of the iceberg that showed above the water : what lay beneath the surface, making them anxious? A group discussion followed, and they compiled a list of factors which led to test anxiety. Sheets of paper were then handed out, and they were asked to draw their own particular iceberg, showing which factors, and in what proportion, made up its underwater portion.

6. Circle of Concentration Exercise

In discussing the role of distracting thoughts in poor performance, children were asked to draw a circle to represent the total amount of concentration they had available during a test. They then drew in segments representing thoughts extraneous to the test situation (e.g. worry about results, what parents or teachers might say, etc.) which were habitual to them, in whatever proportion of the circle they thought appropriate. It was pointed out that only what was left was available to deal with the task on hand. This proved to be a very successful exercise, giving children a graphic demonstration of the effect of distracting thoughts in diminishing available concentration.

CIRCLE OF CONCENTRATION

(EXAMPLE)



APPENDIX F

ATTENTION-PLACEBO COURSE FOR CHILDREN

SESSION ONE : MY FEELINGS ABOUT MYSELF

1.1 Introductory Exercise

This was identical with the first exercise of the multicomponent programme for children, serving as an icebreaker.

1.2 Rationale

The aim of the course was given as to lower the anxiety experienced during tests and examinations. Children were told that one way to do this was to find out more about themselves - how they thought and felt about themselves, other people, and other things. The way people think and feel has a very important effect on the things they do, for example, feeling nervous can lead to poor performance on a test, feeling ill might lead to one of several actions: seeing a doctor, taking medicine, feeling sorry for oneself and so on. The group process was important as it would help them by sharing experiences and ideas, with everyone being equally important and all were to be encouraged to participate. The importance of confidentiality was stressed.

1.3 Famous People

Children were asked in turn the names of three famous people dead or alive (or from a book) whom they would most like to be in order of preference. These were written on the board. A discussion followed during which the following questions were asked:

Why did I choose these? What do I admire about them? What, if anything, do they have in common?

Many of the children chose television stars or pop singers especially Madonna by the girls. What they considered desirable was the fame, money and freedom that she was perceived to have, and which led to lively discussion.

SESSION TWO : VALUES

2.1 Introductory Exercise

Recap of Session One - that the way people think and feel about themselves affects what they do and the way they respond to others. Complete any unfinished discussion from Session One. The children were asked for examples how self-confidence and its lack affect inter-personal relationships.

2.2 Personal Coat of Arms Exercise (as in Appendix E: 1.6.3)

Discussion followed until close of session.

SESSION THREE : MY NEEDS AS A PERSON

3.1. Introductory Exercise

Recap on previous session, identifying values shown in children's Coats of Arms.

3.2 Incomplete Sentences (Canfield & Wells, 1976)

Sheets of sentence stems were distributed and children asked to complete them. Examples were given. When these were completed, discussion followed. Children were asked what they had learned about themselves from the two exercises, Coat of Arms and Sentence Game: what did they need to be happy?

THE SENTENCE GAME

Appendix F 3

1. I get praise from others when I ...
2. The most powerful person I know is ...
3. Something I can do now that I couldn't do last year is ...
4. I can help other people to ...
5. I feel most important when I ...
6. The best thing about being me is ...
7. I do my best work when ...

8. If I could have one wish it would be ...
9. I need ...
10. Something I want but am afraid to ask for is ...
11. I worry about my ...
12. I wish I had the courage to ...
13. I like it when somebody says to me ...
14. The worst thing about being me is ...

3.3. Hierarchy of Needs

The idea of a need hierarchy (Maslow 1954) was introduced in simple terminology, and suggestions regarding basic needs were elicited. The necessity of satisfying these first was pointed out, and so on for each successive level. The children's sentences were scrutinized to determine areas of need and competence. They were helped to identify unmet needs and try to think of ways of having them met (most children felt they did not receive enough approval and praise).

SESSION FOUR : PRAISE AND CRITICISM 1

4.1. Introductory Exercise

Recap of previous session. Children asked whether they had been able to obtain fulfilment of any needs they had expressed.

4.2 Good and Bad

Each child was asked to list three good and three bad things about him- or herself. They were then asked which list was easier to think of. Discussion followed, during which there was general agreement that the list of good things had taken longer to think of than the list of bad things.

They were then asked who had recently praised them for the good things, and who had criticised them for the bad things. Had they received praise and criticism from certain key people?

They were asked how they viewed others: was it easier to see their good or bad points?

The effects of praise and criticism in building the self-concept were then discussed, and the suggestion made that they might try matching criticism of others with a search for good qualities - and do the same for themselves.

4.3 The Metaphor Game (Canfield & Wells, 1976)

Children were told to imagine that in a few moments they were going to turn into an animal, then a food, then a colour. They were asked to write down what these would be (first thought). After that, they were to write down the same for each of the members of the group.

Answers were shared and discussed, and occasioned much hilarity. The researcher also did the exercise for each child, using it as an opportunity for positive feedback.

SESSION FIVE : Praise and criticism (2)

5.1 "A Fairytale" by Claude Steiner was read. The concept of "warm fuzzies" and "cold pricklies" was discussed and examples elicited. The consequences of receiving "cold pricklies" were highlighted and linked with previous group discussions.

A FAIRYTALE

Adapted from a story

by CLAUDE M. STEINER, Ph.D.

Once upon a time, a long time ago, there lived two very happy people called Tim and Maggie with two children called John and Lucy. To understand how happy they were, you have to understand how things were in those days. You see, in those happy days everyone was given at birth a small, soft, Fuzzy Bag. Anytime a person reached into this bag he was able to pull out a Warm Fuzzy. Warm Fuzzies were very much in demand because whenever somebody was given a Warm Fuzzy it made him feel warm and fuzzy all over. People who didn't get warm Fuzzies regularly were in danger of developing a sickness in their back which caused them to shrivel up and die.

In those days it was very easy to get Warm Fuzzies. Anytime that somebody felt like it, he might walk up to you and say, "I'd like to have a Warm Fuzzy." You would then reach into your bag and pull out a Fuzzy the size of a little girl's hand. As soon as the Fuzzy saw the light of day it would smile and blossom into a large, shaggy Warm Fuzzy. You then would lay it on the person's shoulder or head or lap and it would snuggle up and melt right against their skin and make them feel good all over. People were always asking each other for Warm Fuzzies, and since they were always given freely, getting enough of them was never a problem. There were always plenty to go around and as a consequence everyone was happy and felt warm and fuzzy most of the time.

One day a bad witch became angry because everyone was so happy and no one was buying her potions and salves. This witch was very clever and she devised a very wicked plan. One beautiful morning she crept up to Tim while Maggie was playing with their daughter and whispered in his ear, "See here, Tim, look at all the Fuzzies that Maggie is giving to Lucy. You know, if she keeps it up, eventually she is going to run out and then there won't be any left for you."

Tim was astonished. He turned to the witch and said, "Do you mean to tell me that there isn't a Warm Fuzzy in our bag every time we reach into it?"

And the witch said, "No, absolutely not, and once you run out, that's it. You don't have any more." With this she flew away on her broom, laughing and cackling hysterically.

Tim took this to heart and began to notice every time Maggie gave up a Warm Fuzzy to somebody else. Eventually he got very worried and upset because he liked Maggie's Warm Fuzzies very much and did not want to give them up. He certainly did not think it was right for Maggie to be spending all her Warm Fuzzies on the children and on other people. He began to complain every time he saw Maggie giving a Warm Fuzzy to somebody else, and because Maggie liked him very much, she stopped giving Warm Fuzzies to other people as often, and reserved them for him.

The children watched this and soon began to get the idea that it was wrong to give up Warm Fuzzies any time you were asked or felt like it. They too became very careful. They would watch their parents closely and whenever they felt that one of their parents was giving too many Fuzzies to others, they also began to object. They began to feel worried whenever they gave away too many Warm Fuzzies. Even though they found a Warm Fuzzy every time they reached into their bags, they reached in less and less and became more and more stingy. Soon people began to notice the lack of Warm Fuzzies, and they began to feel less and less fuzzy. They began to shrivel up and occasionally, people would die from lack of Warm Fuzzies. More and more people went to the witch to buy her potions and salves even though they didn't seem to work.

Well, the situation was getting very serious indeed. The bad witch who had been watching all of this didn't really want the people to die so she devised a new plan. She gave everyone a bag that was very similar to the Fuzzy Bag except that this one was cold while the Fuzzy Bag was warm. Inside of the witch's bag were Cold Pricklies. These Cold Pricklies did not make people feel warm and fuzzy, they made them feel cold and prickly instead. But, they did prevent people's backs from shrivelling up. So from then on, every time somebody said, "I want a Warm Fuzzy," people who were worried about depleting their supply would say "I can't give you a Warm Fuzzy, but would you like a Cold Prickly?" Sometimes two people would walk up to each other, thinking they could get a Warm Fuzzy, but one or the other of them would change his mind and they would wind up giving each other Cold Pricklies. So, the end result was that while very few people were dying, a lot of people were still unhappy and feeling very cold and prickly.

The situation got very complicated because, since the coming of the witch, there were less and less Warm Fuzzies around, so Warm Fuzzies, which used to be thought of as free as air, became extremely valuable. This caused people to do all sorts of things in order to obtain them. Before the witch had appeared, people used to gather in groups of three or four or five, never caring too much who was giving Warm Fuzzies to whom. After the coming of the witch, people began to pair off and to reserve all their Warm Fuzzies for each other exclusively.

So the situation was very, very dismal and it all started because people believed that some day, when least expected, they might reach into their Warm Fuzzy bag and find no more.

Well, the point is that each of us has a warm fuzzy bag and what we must decide is whether we are going to give each other warm fuzzies, cold pricklies or just nothing at all. The choice is ours.

5.2 Homework

As a homework task, the children were asked to look out for examples of "warm fuzzies" and "cold pricklies", who uses most of which kind, and how many did each child receive. They were also asked to try giving more "warm fuzzies" to others and observe the effect.

(On one group's fifth session, it was the birthday of a group member, so the researcher had brought along a card in which everyone wrote a "warm fuzzy" for her. This clearly pleased the child, and the group enjoyed the experience to the extent that they repeated the experience, and gave the researcher a "warm fuzzy" card at the end of the course: a clear example of modelling!)

SESSION SIX

This session was spent recapping the previous sessions, and in general discussion thereof. Children were asked what they had found useful and enjoyable, and whether they felt less anxious about their test and examinations. Closure followed.

APPENDIX G

COURSE FOR PARENTS (run by two course leaders)

SESSION ONE

1.1. Welcome and Introduction of Course Leaders

1.2. Aim of Course

The aim was stated as offering parents an opportunity to gain more insight into their children's school experience, and improve parenting skills by means of experiential learning.

1.3. Introduction Exercise

Each group member took it in turns to introduce him- or herself to the rest of the group for 2 to 3 minutes, mentioning occupation, interests, family, etc.

1.4. Personal Experiences of Test Anxiety

Group members were asked to share personal experiences of tests or examinations or job interviews with special reference to feelings and thoughts. Discussion followed, with attention being drawn to the commonality of experiences. Based on these experiences, a list of common physical feelings and thoughts that accompany test anxiety was written up for the overhead projector.

1.5 Input on Test Anxiety

A short talk on the nature of test anxiety was given, and the ubiquitousness of the phenomenon in our competitive and evaluative world pointed out. Possible (non-threatening) reasons why some children are more anxious than others were proposed, such as sensitivity, parental and teacher expectations, more competent siblings, peer pressure, negative experiences in the past. The method of measurement was detailed, as parents invariably wanted to know how their children had been selected and treatment issues also explained. Questions were welcomed.

1.6 Guided Meditation

Parents were led in a guided meditation on their child: his or her greatest achievement in the past 12 months..... and greatest failure.....if they had six months left to live, what values would they wish to impart to their child?.....and which single material possession?.....

These were written down and shared with the group.

4.2 SESSION TWO

4.2.1 Aim

To look at communication between parents, children and teachers.

Introduction of any persons not present the week before.

2.2 Exercise 1 : Roadblocks to Communication

Each person was asked to write down a few factors that helped and a few that hindered communication. The two course leaders then role-played a series of situations between parent and child illustrating roadblocks to communication (advising/problem-solving; judging, blaming, moralizing; avoidance; taking over; misunderstanding; not listening; diverting), ending with an example of listening and reflecting of feelings. The parents were asked to record what they thought of the types of communication. Discussion followed.

2.3 Exercise 2 : Communication with the school

Each person was asked to make a mark on a piece of paper to represent themselves. They were then asked to make marks representing their child's teachers, other staff and other parents, showing how near or far from themselves they regarded them. Group discussion followed, and ways of decreasing distance mooted.

2.4 Input on improving communication to the school and generally: Handout given, "Communication", from the Life Line Training course notes (Life Line is a voluntary lay counselling organization).

COMMUNICATION

"A relationship will be only as good as its communication."

A. There are different levels of communication

1. Cliche Conversation

How are you? Fine, thanks ...

This is the conversation, the communication, of the cocktail party, the tennis club meeting. There is no sharing of persons at all. Everyone remains safely in the isolation of his pretence, sham, sophistication. The whole group seems to gather to be lonely together. Places we've been to ... and "It" statements.

2. Reporting the facts about others.

We shelter behind gossip items and little tales about others. We give nothing of ourselves and invite nothing from others in return. Did you hear about so and so ... Using "he", "she" and "they" statements.

3. My ideas and judgments

Here there is some communication of ourselves. We risk sharing some of our judgments and decisions but we want to be sure that our ideas will be accepted so we watch the other person's response. We start to use "I" statements in our communication.

4. My feelings

Actually, the things that most clearly differentiate and individuate me from others, that make the communication of my person a unique knowledge, are my feelings and emotions. The feelings that lie under my ideas, judgments and convictions are uniquely mine ... It is these feelings, on this level of communication which I must share with you, if I am to tell you who I really am. Most of us feel that others will not tolerate such emotional honesty in communication. We try not to hurt others, we try not to hurt ourselves, we're afraid to take the risk. John Powell in his book "Why am I afraid to tell you who I am?" answers this question by saying "I am afraid to tell you who I am because you might not like who I am and it's all I've got."

5. Peak Communication.

All deep and authentic relationships need to be based on a real openness and honesty. At "Peak" moments each person will really feel understood by the other person and at one with each other. This is the I-Thou relationship described by Martin Buber, and when it occurs for each of us it is beautiful and totally transcends all that is happening.

B. Some Pointers towards Peak Communication

1. Never imply a judgement of another person e.g. "You're not being straight" Rather say: "I'm feeling uneasy with you" which indicates your honest reaction without implying that it is the other person's fault. If I see someone stealing another's money, I can judge that this action is morally wrong, but I cannot judge him.
2. Feelings are facts (they are neither good nor bad but are to be recognised, accepted and expressed). As human beings we are more than intellectual beings - we act, we think and we feel.
3. Feelings must be integrated with the intellect and will. e.g. Do I want to act on this feeling or not? Don't act on feelings all the time! There needs to be an appropriateness about the expression or non-expression of our feelings.

4. Feelings must be reported.
5. Usually, feelings must be reported at the time they are being experienced.

If the friendship is important it is better not to delay telling of our feelings.

(Adapted from "Why am I afraid to tell you who I am?" by John Powell).

C. Roadblocks to Communication

To ensure meaningful communication we need to communicate our acceptance of the other person and their feelings verbally. All too often our responses take the form of good advice ("you're too dumb - here's the answer!"), questions (looking for more facts), judgments ("there's something wrong with you") or avoidance ("I don't want to deal with this now"). These responses block the person from sharing their real feelings.

When a person is not experiencing a crisis or needing to share their feelings then the "roadblocks" may lose that stigma and become both appropriate and productive (e.g. asking questions, joking, instructing - are all part of our usual communication patterns). However "roadblocks" such as name-calling and other "put-downs" are never appropriate or helpful.

The "roadblocks" tend to fall into 3 categories (below each are examples and some possible effects of using them):

Solution Messages (the hidden message is "You're too dumb, here's the answer").

1. Ordering, directing, commanding

"You must ...", "You have to ...", "You will"

- Can produce fear or active resistance.
- Invites "testing" to see if you really mean it.
- Promotes rebellious behaviour, retaliation.

2. Warning, threatening

"If you don't, then ...", "You'd better, or ..."

- Can produce fear, submissiveness.
- Invites "testing" of threatened consequences.
- Can cause resentment, anger, rebellion.

3. Moralizing, Preaching

"You should...", "You ought to...", "It is your responsibility..."

- Create "obligation" or guilt feelings
- Can cause person to "dig in" and defend his or her position
- Communicates lack of trust in person's sense of responsibility.

4. Advising, giving solutions or suggestions

"What I would do is ...", "Why don't you...", "Let me suggest ..."

- Can imply person is not able to solve their own problem.
- Prevents person from thinking through the problem, considering alternatives and trying them out for reality.
- Can cause dependency or resistance.

5. Persuading with logic, arguing, lecturing

"Here is why you are wrong...", "The facts are ..." "Yes, but...."

- Provokes defensive position and counter arguments
- Often causes person to "turn off" you, to quit listening
- Can cause person to feel inferior, inadequate.

Judgmental Messages (The hidden message is a put down - "There's something wrong with you")

6. Judging, Criticising, Blaming

"You are not thinking maturely ...", "You are lazy"

- Implies incompetency, stupidity, poor judgment.
- Cuts off communication from the person for fear of negative judgments.
- Person often accepts the judgement as true (eg "I'm bad") or retaliates (eg "You're not so great yourself")

7. Praising, agreeing

"Well, I think you're doing a great job!" "You're right - that person sounds terrible!"

- Implies high expectations as well as a supervision of the other person's behaviour.
- Can be seen as patronizing or as a manipulative effort to encourage desired behaviour.
- Can cause anxiety when person's perception of self doesn't match your praise

8. Name-calling, ridiculing

"Cry-baby", "Okay, Mr Smarty..."

- Can cause person to feel unworthy, uncared for.
- Can have devastating effect on self-image.
- Often provokes verbal retaliation.

9. Analysing, Diagnosing

"What's wrong with you is...", "You're just tired", "You don't really mean that."

- can be threatening and frustrating.
- person can feel either trapped, exposed or not believed.
- stops person from communicating for fear of distortion or exposure.

10. Reassuring, sympathising

"Don't worry", "You'll feel better", "Oh, cheer up!"

- causes person to feel misunderstood
- evokes strong feelings of hostility ("That's easy for you to say!")
- person often picks up a message of "It's not all right for you to feel that way."

11. Probing and Questioning

"Why?" "Who...?" "What did you...?" "How...?"

- person can lose sight of own problem while answering questions spawned by your concern
- since answering questions can result in a feeling of being exposed or getting criticisms people often reply with non-answers, avoidance, half-truths or lies.
- since questions often keep the person in the dark as to what you are driving at, the person may become anxious or fearful.

AVOIDING MESSAGES (The hidden message says "I don't want to deal with this")

12. Diverting, sarcasm, withdrawal

"Let's talk about pleasant things...", "Why don't you try running the world", remaining silent, turning away.

- implies that life's difficulties are to be avoided rather than dealt with
- can infer person's problems are unimportant, petty or invalid.
- stops openness from person when they are experiencing a difficulty.

2 other barriers are:

Red-flag listening: To some individuals certain words are like the proverbial red rag to a bull. When we hear them we get upset and stop listening. Words such as "communist", "liberal", "irresponsible youth", "rising cost of living" etc. may cause some to react almost automatically. We "turn off" the speaker, lose contact with him and fail to understand him.

Glassy-eyed listening: Sometimes we look at a person and seem to be listening, though our minds may be on other things. We drop back into the comfort of our own thoughts. We get glassy-eyed and a dreamy expression appears on our faces. We can tell when people look at us in this way, and they recognise it in us. When we are listening to ideas which we feel are too involved for us to follow, we tend to switch off. We should make a real effort to follow the discussion; we might find the subject or speaker interesting if we listen and understand what is being said.

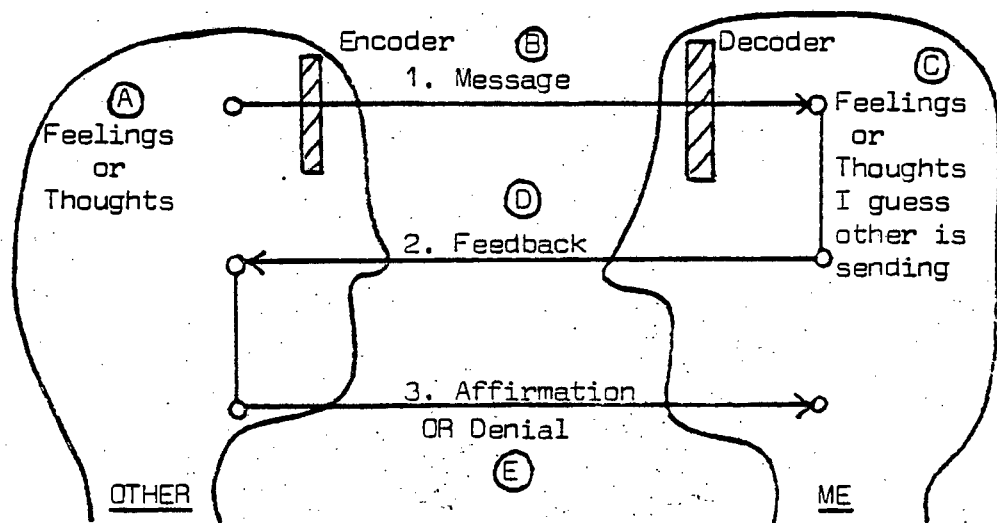
D. ALTERNATIVES TO "ROADBLOCKS" - "The Language of Acceptance"

1. Passive Listening - Silence - too often we rush in before the full stop. Try allowing the other person to really finish before speaking. Use the silences to think about what has been said, to empathise with the other.
2. Non-committal acknowledgments - "Oh", "I see", "Mm hmm", "Really" - the grunts and groans of communication. These give the person speaking the acknowledgement to continue talking and let him know you understand and are "with" him.
3. Door openers - "Tell me about it", "You want to talk?" - these vague and non-specific phrases allow the person to start into a new area. We "open the door" for the other to speak and share.
4. Active Listening - In this process we attempt to understand the feelings and thoughts of the other and let him know this. This process allows the person to feel really understood and to verbalise the feelings present.

There are 3 steps in the Active Listening Process:

- (1) The person experiencing some situation which gives rise to feelings or thoughts sends me a message. (The feeling or thought is encoded and communicated to me verbally or non-verbally).
- (2) I decode the message and guess at what the other is feeling or thinking. I need to check this out to ensure I have accurately "heard" the other so I send him some feedback. (I feed back to him the feelings or thoughts I guess he is experiencing).
- (3) The other receives my feedback and either affirms or denies that this is what he is thinking or feeling. If the feedback is denied the other can attempt to send a clearer message.

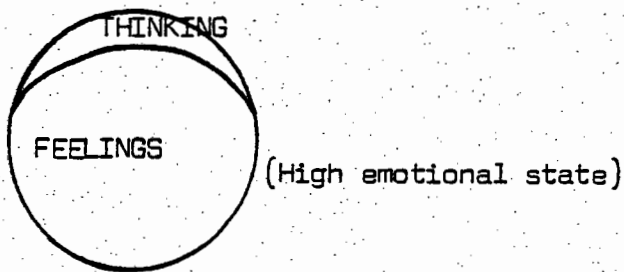
Once my feedback is affirmed the process repeats itself allowing the other to communicate all the feelings and thoughts present to me.



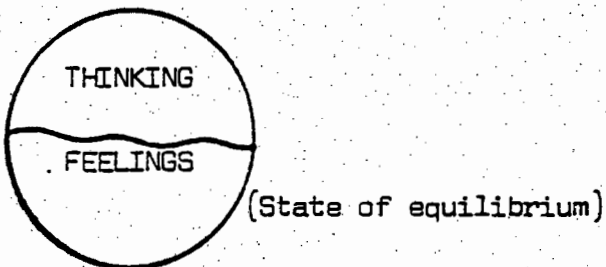
An example:

- (A) The Person Feels: Lonely and depressed.
- (B) The Person sends me a Message: "Are you going out?"
- (C) I Guess the Person is Feeling: Lonely.
- (D) My Feedback is: "You are feeling lonely?"
- (E) The Person Responds: "Yes and I wish you wouldn't go out tonight"

So often people in a crisis or involved in an emotional situation find themselves unable to "think clearly"



and they need to restore an equilibrium:



Active listening allows the person to express the feelings present and reach this equilibrium.

Some common mistakes in using Active Listening:

- (1) Manipulating - Using the process to get the other person to behave or think the way we think they should.
- (2) Opening the door, then slamming it shut - we use active listening to establish a relationship then very quickly switch to evaluating, moralizing, advising or offering solutions.
- (3) Parroting - merely repeating back what the other has said - "the words" - not the feelings behind the words.
e.g. "Hey look I got engaged to John"
Parroting response: "You got engaged to John"
Active listening response: "You really are excited about your engagement."
- (4) Listening without empathy - here we miss the feelings or continue to misunderstand what is really being said.
- (5) At the wrong time - when we are being asked for factual information or the other is not transmitting any feelings it would be inappropriate to active listen them.
e.g. "How much is the fee for Part 2 of the training course?"
Active listening response: "You're worried about the cost of the course?"
Appropriate response: "The course costs...."

* * * * *

SESSION THREE

3.1 Exercise 1 : Styles of Parenting

Parents were asked to draw a continuum with "authoritarian" on the left-hand side and "permissive" on the right. They were to mark themselves somewhere on that continuum as a parent to their Standard 4 child. They were asked to consider, and write down, whether this was where they really wanted to be, or was their position in some way influenced by their partner's ideas. If the two differed, how were differences resolved.

The next step was to mark themselves on the continuum as they were 8 years earlier. After they had done that, they were asked to anticipate where they would be in 8 years' time.

Each person then shared what he/she had discovered with the rest of the group. The object of the exercise was to demonstrate that parenting styles do change, appropriately so, with different stages of childhood and adolescence, and most people found this to be the case.

3.2 Input on Appropriate Parenting

Development discussed on different levels: children's development, parental development and societal change, and how this affected parenting. The need for flexibility and dialogue between parents and children on rules and limits was suggested.

3.3 Exercise 2: Parenting Goals

Parents were asked to list two or three short-term and the same number of long-term parenting goals. They were then encouraged to see whether they were compatible with one another, and which were more important. For example, a short-term goal might be that the child keeps his or her room tidy, whereas a long term goal might be a good adult relationship with the child in time. If continual nagging occurred over tidyness, the long-term goal might be prejudiced. Common problem areas were identified and creative compromises were discussed with much hilarity and enjoyment. Parents stated that they had not before had the opportunity to compare notes with such numbers of parents whose children were the same age.

3.4 Concluding Exercise: Coat of Arms

Recap on first session: the greatest achievement and disappointment concerning their child in the past year. These highlighted their own values and might indicate areas where pressure was being brought to bear on children via parental expectations. It was obvious that having academic achievement as a value could lead to pressure on children: less obvious was that valuing a "nice nature" (which had been mentioned by two mothers as their offspring's greatest achievement) might lead to the children suppressing normal negative feelings, such as anger, in order to be acceptable.

Each parent received a blank Coat of Arms photostat, and was asked to draw in each of the four quadrants

- (1) Their greatest virtue as a parent.
- (2) Their greatest failing as a parent.
- (3) The experience they would most like to share with their child, or arrange for their child to experience.
- (4) The material possession of theirs they would most like to bequeath to their child.

and their motto as a parent to be written at the foot.

Open discussion followed, ending with farewells.

APPENDIX H

DESCRIPTIVE STATISTICS

Descriptive statistics are presented first for all Standard 4 pupils tested over the period of study, and then for the following subpopulations: (1) Schools: A (School A 1985), B1 (School B 1985), B2 (School B 1986); (2) Classes: 1, 2 and 3 (School A 1985); 4 and 5 (School B 1985); 6 and 7 (School B 1986); (3) all high-test-anxious subjects combined; (3) High-test-anxious groups: E1 (Experimental Group 1), C1 (Control Group 1), E2 (Experimental Group 2), A-P (Attention-Placebo Group), E3 (Experimental Group 3), C3 (Control Group 3); (4) Balance of pupils.

It should be noted that frequencies vary for some categories since data were not always available for all pupils.

A correlation matrix for the total population precedes the descriptive statistics.

1. CORRELATION MATRIX : TOTAL POPULATION

VAR:	1	2	3	4	5	6	7	8	9
1.AGE	-								
2.SEX	-.095	-							
3.VERB	-.282**	-.005	-						
4.NONV	-.262**	-.030	.653**	-					
5.TIQ	-.257**	.052	.918**	.893**	-				
6.ACH	-.267**	.060	.593**	.517**	.624**	-			
7.SC	-.069	.045	-.013	.079	-.017	.249**	-		
8.TASC	.103	.216**	-.299**	-.191*	-.187*	-.307**	-.404**	-	
9.AMTA	.272*	.331**	-.137	-.298*	-.245*	-.386**	-.486**	.912**	-

r crit (df 206) $p < 0.05 = .138$ $p < 0.01 = .181$

r crit (df 144 TASC) $p < 0.05 = .159$ $p < 0.01 = .208$

r crit (df 60 AMENDED TASC) $p < 0.05 = .240$ $p < 0.01 = .313$

The correlation matrix revealed a high degree of intercorrelation of variables. These relationships will be discussed where appropriate in the following sections.

2. AGE IN MONTHS

	FREQ.	MEAN	SD	SMALLEST	LARGEST
TOTAL	208	135.69	5.1	123.00	155.00
SUBPOPULATIONS:					
SCHOOL					
A	81	135.43	4.8	128.00	151.00
B1	65	136.06	5.5	123.00	155.00
B2	62	135.63	5.3	126.00	150.00
CLASS:					
1	28	135.39	4.4	128.00	148.00
2	29	135.79	5.8	128.00	151.00
3	24	135.04	4.2	128.00	144.00
4	32	135.13	4.8	128.00	150.00
5	33	136.97	6.0	123.00	155.00
6	34	134.54	4.4	126.00	145.00
7	28	137.00	6.0	128.00	150.00
HIGH-TEST-ANXIOUS (ALL)					
	90	136.63	5.7	123.00	155.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	136.9	4.6	129.00	146.00
C1	20	136.1	6.0	128.00	151.00
E2	13	135.39	3.5	128.00	139.00
A-P	13	136.85	8.5	123.00	155.00
E3	12	137.92	5.6	130.00	150.00
C3	12	137.00	6.1	128.00	150.00
BALANCE OF PUPILS					
	118	135.02	4.6	126.00	150.00

There was a range of 32 months in the total population of Standard 4 pupils with a mean of 135.69 and both mode and median of 135.00. The distribution was skewed to the right (ratio of skewness to its standard error = 4.10), as 17 pupils had failed a year at some point in their school careers, a factor which also accounts for the negative relationship between age and IQ as shown in the correlation matrix (Verbal IQ $r = -.282$; NonVerbal IQ $r = -.262$; Total IQ $r = -.257$ $p < .01$). Also, the tails of the distribution were heavier than normal (ratio of kurtosis to its standard error = 3.04).

The relationship of test anxiety to age in 1985 pupils (as measured by the TASC) was non-linear, a tendency existing for pupils in the tails to be high-test-anxious: 9 of the 12 pupils who had failed, and 50% of the youngest pupils were test-anxious. Thus the age range in high-anxious pupils was 32 months compared with 24 months in low-anxious pupils. The Attention-Placebo group (School B 1985) was the group to show the greatest range, having within it the youngest pupil, a boy of 10 years 3 months at the time of pre-test, who had started his schooling in another country where the school starting age was less than in the Republic of South Africa, and a girl who was 12 years 11 months (151.00) at the time of pre-testing. The nonlinear nature of the relationship of age to test anxiety accounts for the correlation of .103 between the two in 1985 data, although the Amended TASC and age showed a positive relationship in 1986 as 4 of the 5 1986 pupils who had failed at some stage were high-test-anxious.

3. SEX (boys=1 girls=2)

	FREQ.	MEAN	SD	SMALLEST	LARGEST
TOTAL	208	1.52	.50	1.00	2.00
SUBPOPULATIONS:					
SCHOOL					
A	81	1.52	.50	1.00	2.00
B1	65	1.52	.50	1.00	2.00
B2	62	1.53	.50	1.00	2.00
HIGH-TEST-ANXIOUS (ALL)					
	90	1.64	.48	1.00	2.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	1.60	.50	1.00	2.00
C1	20	1.60	.50	1.00	2.00
E2	13	1.69	.48	1.00	2.00
A-P	13	1.69	.48	1.00	1.00
E3	12	1.67	.49	1.00	2.00
C3	12	1.67	.49	1.00	2.00
BALANCE OF PUPILS					
	118	1.43	.50	1.00	2.00

In the total population of Standard 4 pupils the sexes were evenly represented, as was also the case at each school. More girls than boys scored above the mean in test anxiety, confirmed by the low, positive and significant correlation between sex and test anxiety (sex x TASC $r = .216$; sex x Amended TASC $r = .331$ $p < .01$).

4. VERBAL IQ

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	154	112.17	13.3	83.00	145.00
SUBPOPULATIONS:					
SCHOOL					
A	40	105.18	11.2	83.00	130.00
B1	52	113.79	13.9	86.00	145.00
B2	62	115.32	12.5	91.00	142.00
HIGH-TEST-ANXIOUS (ALL)					
	90	109.96	12.90	83.00	143.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	100.45	10.1	83.00	116.00
C1	20	109.90	10.4	84.00	130.00
E2	13	116.46	13.6	94.00	143.00
A-P	13	107.46	12.3	86.00	128.00
E3	12	115.00	12.5	100.00	137.00
C3	12	116.50	12.8	92.00	131.00
BALANCE OF PUPILS					
	64	115.28	13.4	89.00	145.00

The total number of pupils for whom Verbal IQ's were available was 154, and the mean score for this population was above average at 112.17 (SD 13.3), with a median of 112.00 and a mode of 115.00. The distribution was close to normal in shape (ratio of skewness to its standard error: .66; ratio of kurtosis to its standard error: -.92).

There was a tendency for younger children to obtain higher scores in this subscale ($r = .282$), which is to be expected in a population where the older children are those who have failed. This subscale was closely related to the Non-verbal and Total IQ scores (Verbal x Non-verbal $r = .653$; Verbal x Total $r = .918$) and academic achievement ($r = .593$). A low significant negative correlation existed between Verbal IQ and test anxiety in 1985 pupils (Verbal x TASC $r = -0.299$ df 144 $p < 0.1$), which is somewhat lower than that reported in previous research. The 1986 data revealed only a negligible relationship (Verbal x Amended TASC $r = -.137$).

Pupils at School A scored less on average on the Verbal subscale than pupils at School B. It is possible that there may have been a lack of standardisation on the part of examiners as the two schools were not served by the same school psychologist. However, the pupils at School B

may have possessed a somewhat higher level of verbal skills as a result of their home environments: although both suburbs may be categorised as upper-middle to middle class, the suburb in which School B is situated has a higher percentage of professional and upper managerial heads of families, and women who pursue careers (as distinguished from "jobs"), and it is noticeable to an observer that pupils at School B are, for the most part, highly articulate. The mean scores for Standard 4 pupils in School B for 1986 were very similar to those obtained in 1985.

High-test-anxious groups in 1985 were not equivalent in Verbal IQ as no attempt was made to control for intelligence. Subjects in E1 obtained lower scores than subjects in C1, while this was reversed in E2 and A-P. Groups E3 and C3 were equivalent, however, as equal numbers were drawn from each of the streamed classes.

5. NON-VERBAL IQ

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	154	115.13	13.9	82.00	145.00
SUBPOPULATIONS:					
SCHOOL					
A	40	113.18	12.9	88.00	145.00
B1	52	115.00	14.1	87.00	145.00
B2	62	116.50	14.4	82.00	145.00
HIGH-TEST-ANXIOUS (ALL)					
	90	113.90	12.7	87.00	145.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	113.00	14.6	92.00	145.00
C1	20	113.05	11.3	88.00	137.00
E2	13	119.08	12.0	101.00	141.00
A-P	13	109.54	15.2	87.00	145.00
E3	12	114.92	12.1	88.00	131.00
C3	12	115.08	10.2	98.00	127.00
BALANCE OF PUPILS					
	64	116.73	15.4	82.00	145.00

This population obtained an above-average mean score for the Non-verbal subscale, with a median of 114.00 and, surprisingly, a mode of 145.00: of the 9 pupils who obtained this score, 7 were below the mean in test anxiety. A skew to the right was thus apparent in the distribution (ratio of value of skew to its standard error 1.63). No differences were apparent between the schools. Again, high-test-anxious pupils obtained lower mean scores

than the balance of pupils, but the difference had lessened to 3 IQ points in this subscale and the negative correlation with test anxiety had decreased, although still significant ($r = .19$ df 152 $p < .05$).

Paired groups E1 and C1, and E3 and C3 were equivalent, but the pair E2 and A-P were not, with the latter obtaining almost 10 points less than the former.

Fourteen of the 90 high-test-anxious children (15.5%) had discrepancies of 15 or more IQ points between the Verbal and Non-verbal subscales, and of these 12 had Verbal lower than Non-verbal. Among the balance of 154 pupils, only 11 (7%) showed a discrepancy of 15 points, and 5 of these had higher Verbal than Non-verbal. This is not significantly different, however, (chi square = .355 df 1 $p > .05$).

6. TOTAL IQ

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	202	114.21	13.3	84.00	145.00
SUBPOPULATIONS:					
SCHOOL					
A	76	110.83	12.5	84.00	141.00
B1	64	115.78	14.0	88.00	142.00
B2	62	116.742	12.8	89.00	145.00
HIGH-TEST-ANXIOUS (ALL)					
	90	112.33	12.18	86.00	142.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	106.00	10.0	92.00	129.00
C1	20	111.70	10.7	86.00	132.00
E2	13	118.69	12.8	97.00	140.00
A-P	13	109.31	14.6	88.00	142.00
E3	12	115.83	10.5	94.00	130.00
C3	12	116.83	11.9	96.00	129.00
BALANCE OF PUPILS					
	111	115.57	14.0	84.00	145.00

As Total IQ scores are an average of the two subscales, they add little to the information already provided. The negative correlation between test anxiety and Total IQ in the population had declined slightly ($r = .173$ df 200 $p < .05$). The distribution was not skewed (value of skew to standard error .42) but there was a tendency for the tails to be lighter than normal (ratio of kurtosis to its standard error -1.30).

7. ACHIEVEMENT (PRE-TEST)

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	189	.998	.14	.500	1.360
SUBPOPULATIONS:					
SCHOOL					
A	80	1.000	.14	.750	1.260
B1	47	.974	.17	.500	1.360
B2	62	.979	.13	.710	1.290
HIGH-TEST-ANXIOUS (ALL)					
	90	.968	.15	.500	1.360
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	.912	.11	.750	1.150
C1	20	1.007	.13	.810	1.240
E2	13	1.033	.14	.850	1.280
A-P	13	.903	.23	.500	1.360
E3	12	.963	.12	.780	1.130
C3	12	.998	.13	.780	1.260
BALANCE OF PUPILS					
	99	1.029	.13	.710	1.310

As the method of scoring achievement was to divide the individual pupil's Standard 3 examination score by the average of the whole of Standard 3, the mean of each school should be 1.000 and deviations from this indicate that results were not available for all pupils and/or that results for some pupils were for examinations taken at other schools and adjusted in terms of those schools' Standard 3 averages. The distribution for the whole population was normal in shape. There was a moderately low but significant negative correlation between test anxiety and pre-test achievement ($r = -.31$ df 187 .01), with mean scores for high-test-anxious pupils being a little lower than low-test-anxious pupils (0.968 : 1.029).

The pre-test achievement of the 1985 high-test-anxious groups reflects their IQ position: C1 and E2 obtained higher scores than E1 and A-P respectively. This is not so for E3 and C3 who, although having very similar mean IQ scores, did not manifest the same pattern in achievement, with higher scores being obtained by C3.

Actual average examination percentages were as follows:

	Std 3	Std 4	Std 5
School A	68.00	58.00	55.00
School B (1985)	67.00	64.00	59.00
School B (1986)	69.00	62.00	55.00

These were rounded off to the nearest whole figure. They demonstrate clearly the drop in percentage which occurs in Standard 4, and continues in Standard 5. This is a cause for concern to individual pupils and parents if they are not aware that it is a general phenomenon.

8. SELF-CONCEPT (PRE-TEST)

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	208	56.70	12.0	13.00	79.00
SUBPOPULATIONS:					
SCHOOL					
A	80	56.55	11.6	19.00	73.00
B1	65	56.08	11.3	13.00	79.00
B2	62	57.59	13.4	15.00	75.00
HIGH-TEST-ANXIOUS (ALL)					
	90	51.53	12.7	13.00	74.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	51.55	12.2	24.00	65.00
C1	20	51.50	11.46	19.00	69.00
E2	13	53.08	15.8	13.00	74.00
A-P	13	49.69	9.1	34.00	62.00
E3	12	51.00	13.2	30.00	71.00
C3	12	52.42	16.4	15.00	69.00
BALANCE OF PUPILS					
	118	60.67	9.9	26.00	79.00

The distribution for this variable in the total population was not a normal one, as it was both skewed to the left (ratio of value of skewness to its standard error: -6.07) and the tails were heavier than normal (ratio of value of kurtosis to its standard error: 3.28). The mean was 56.7, with a median of 59.00 and in place of an unique mode there was one peak of 11 subjects at 53.00, another 11 at 60.00 and 10 each at 63.00, 69.00 and 70.00. There was thus a propensity for children to view themselves in a favourable light, with only 21.3% of the total population scoring below 50 in this 80 item self-report scale. The mean score of high-test-anxious pupils was 9 points less than the balance of pupils (51.53 to 60.67). Groups of high-test-anxious children were equivalent in pre-test self-concept.

9. TEST ANXIETY (TASC) (PRE-TEST): 1985

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	146	14.11	5.8	0.00	27.00
SUBPOPULATIONS:					
SCHOOL					
A	81	13.24	6.3	0.00	26.00
B1	65	15.22	5.1	3.00	27.00
HIGH-TEST-ANXIOUS (ALL)					
	66	19.11	3.5	12.00	27.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	18.65	3.6	13.00	26.00
C1	20	18.15	4.1	12.00	25.00
E2	13	20.61	3.1	15.00	27.00
A-P	13	19.77	2.4	16.00	24.00
BALANCE OF PUPILS					
	80	10.00	3.9	0.00	14.00

The mean of the 30-item TASC for the 1985 population of Standard 4 pupils at the two schools was 14.47 with a standard deviation of 6.8 which was strikingly similar to figures obtained for 149 Standard 4 pupils in the same schools in 1982 (mean of 15.34, SD 6.8 : Baddeley, 1982), and 165 Standard 4 pupils in 1983 (mean of 15.34, SD 9.5: Baddeley, 1984).

The distribution was not skewed (ratio of skewness to its standard error $-.44$), but the tails were somewhat lighter than normal (ratio of kurtosis to its standard error -1.18). The mean, median and mode for this population were the same, at 14, and there was a range of 27.

The mean level of test anxiety was higher in School B, which may be related to a greater degree of overt competitiveness than was apparent at School A, but, interestingly, there were five scores above 23 at School A and only two at School B.

Pupils were classified as high-test-anxious if they scored above their own class mean for test anxiety, and hence the range of scores from 12 to 27 in the test-anxious subpopulation was greater than would have been the case had the population mean been the cut point. The same was true of the balance of pupils which, combining as it did pupils from the two schools, contained within it some pupils who scored more than others classified as "high-test-anxious" in relation to their own classmates. The mean and median

of the high-test-anxious subpopulation were both 19 with a mode of 22. The general tendency for girls to obtain higher test anxiety scores than boys was evident in that of the 90 children identified as test-anxious, 58 were girls. However, 3 of the 7 highest scorers were boys all of whom had very low self-concepts (mean 20.33, 36 points below the Standard 4 self-concept population mean of 56.7), whereas the mean self-concept of the 4 most test-anxious girls was 55.25.

10. TEST ANXIETY (AMENDED TASC) (PRE-TEST): 1986

	NO.	MEAN	SD	SMALLEST	LARGEST
SCHOOL:					
B2	62	26.13	16.3	2.00	84.00
CLASS:					
HIGH-ABILITY	34	18.91	5.3	2.00	46.00
LOW-ABILITY	28	34.89	3.5	9.00	84.00
HIGH-TEST-ANXIOUS	24	40.33	16.6	20.00	84.00
HIGH-TEST-ANXIOUS GROUPS					
E3 HIGH-ABILITY	6	30.16	8.5	20.00	46.00
E3 LOW-ABILITY	6	53.83	17.9	34.00	84.00
C3 HIGH-ABILITY	6	28.83	9.8	20.00	46.00
C3 LOW-ABILITY	6	48.50	13.9	34.00	71.00
COMBINED					
E3	12	42.00	18.2	19.00	84.00
C3	12	38.67	15.4	20.00	71.00
BALANCE OF PUPILS	38	17.16	7.46	2.00	31.00

The effect of offering pupils the opportunity to rate their TASC "yes" answers on a scale of 1 to 3 according to how strongly they felt, led to a change in the shape of the test anxiety distribution. From being close to normal in shape with the original TASC, that with the Amended TASC was skewed to the right, with tails that were heavier than normal (ratio of skewness to its standard error = 4.24; ratio of kurtosis to its standard error = 2.95), necessitating transformations in the statistical analyses.

only-child families, fifty percent of the two-child families, fifty-two percent of the three-child families, twenty-eight percent of the four-child families and twenty percent of the five-child families had a child in this sample who was high-test-anxious. There was thus somewhat less likelihood for children from four- or more child families to suffer from test anxiety, with a peak in incidence in the two- and three-child families.

12. POSITION IN FAMILY

	NO.	MEAN	SD	SMALLEST	LARGEST
TOTAL	194	1.94	.9	1.00	6.00
SUBPOPULATIONS:					
SCHOOL					
A	75	1.89	.8	1.00	4.00
B1	59	1.97	1.1	1.00	6.00
B2	60	1.97	.9	1.00	5.00
HIGH-TEST-ANXIOUS (ALL)					
	90	1.93	.8	1.00	5.00
HIGH-TEST-ANXIOUS (GROUPS)					
E1	20	1.95	.8	1.00	3.00
C1	20	2.00	.9	1.00	4.00
E2	13	2.00	.8	1.00	4.00
A-P	13	1.61	.5	1.00	3.00
E3	12	2.25	1.1	1.00	5.00
C3	12	1.75	.6	1.00	4.00
BALANCE OF PUPILS					
	104	1.94	1.0	1.00	6.00

The two schools were situated in maturing suburbs, where a minority of school-going children were the elder/eldest in their families. This gave rise to an initially misleading impression of overrepresentation of younger/youngest children in the high-test-anxious groups (73% of test-anxious children fell into these positions in the family with another 4% as only children), which was dispelled when data for the whole population were gathered. It was discovered 63% of the balance of pupils were also youngest children, with a further 6% as only children; thus the composition of high-anxious groups reflected that of the Standard 4 population in general.

APPENDIX I

(Expanded analysis of test anxiety data, Study 1)

TABLE 1 : TASC ANOVA SUMMARY TABLE

SOURCE	SS	DF	MS	F
A	15.31	1	15.31	.47
B	25.31	1	25.31	.38
A x B	6.61	1	6.61	.20
ERROR	1175.95	36	32.67	
C	437.11	1	437.11	46.92 **
A x C	35.11	1	35.11	3.77
B x C	52.81	1	52.81	5.67 *
A x B x C	9.11	1	9.11	.98
ERROR	335.35	36	9.31	

* $p < .05$ ** $P < .01$

As the probability of obtaining an F of 5.67 for the B x C interaction was less than .05, the interaction is analysed further in order to interpret it as a trend.

Simple Main Effects, B at C1, B at C2, C at B1 and C at B2 were inspected. As they featured in a two-factor interaction, the B and C main effects were not interpreted directly. Factor A was not involved in any interaction, and its main effect was non-significant, indicating that the time of intake for treatment and posttesting did not have an effect.

TABLE 2: RELEVANT SIMPLE MAIN EFFECTS

SOURCE	SS	DF	MS	F
B AT C1	2.50	1	2.50	.12
B AT C2	75.63	1	75.63	3.60
ERROR	1133.48	54	20.99	
C AT B1	396.90	1	396.90	42.61 * *
C AT B2	93.03	1	93.03	9.99 * *
ERROR	335.35	36	9.32	

TABLE 3: TASC BC MEANS

	C1	C2
B1	18.65	12.35
B2	18.15	15.1

Interpretation

B at C1 and B at C2

Subjects receiving treatment (E1) and control subjects (C1) were equivalent on levels of pretest test anxiety ($p > .05$). By posttest, a difference had become apparent but one which did not quite reach significance (F calculated = 3.60 F critical df 1,54 4.02).

C at B1 and C at B2

E1 subjects showed a marked drop in test anxiety of an average of 6.3 on the TASC, from 18.65 pretest to 12.35 posttest ($p < .01$). Control subjects also dropped in level of test anxiety, but to a less marked degree, an average of 3.05, from 18.15 to 15.1 ($p < .01$).

Summary

Test-anxious subjects receiving contextualised treatment and their controls at School A demonstrated reduced test anxiety at posttest. The interaction effect ($p < .05$) indicated that there was a difference in the degree of reduction of test anxiety in subjects in the two conditions, with the greater reduction in those who received treatment, but this was insufficient to lead to a between-group difference at posttest.

APPENDIX J

SUBSCALES OF THE TEST ANXIETY SCALE FOR CHILDREN

MEANS AND STANDARD DEVIATIONS

STUDY 1

GROUP	TA		RSC		PSE		SSA	
	pre	post	pre	post	pre	post	pre	post
E1	5.7 (2.1)	3.1 (2.4)	2.4 (.1)	1.8 (1.2)	3.0 (1.3)	1.9 (1.1)	4.7 (1.3)	2.8 (1.8)
C1	5.8 (2.4)	4.6 (2.5)	2.6 (1.2)	2.3 (1.8)	3.1 (1.8)	2.2 (1.3)	5.0 (1.3)	3.9 (1.7)
B1	2.0 (1.5)	1.3 (1.7)	.9 (.8)	1.6 (1.3)	1.6 (1.3)	.9 (.9)	1.8 (1.6)	1.4 (1.5)

STUDY 2

GROUP	TA		RSC		PSE		SSA	
	pre	post	pre	post	pre	post	pre	post
E2	5.9 (2.2)	3.9 (2.3)	3.5 (1.3)	2.2 (1.5)	3.0 (1.1)	2.5 (1.4)	5.3 (1.7)	3.9 (1.7)
A-F	6.8 (1.5)	4.4 (2.5)	3.4 (1.3)	1.9 (1.1)	2.8 (1.7)	2.8 (1.2)	5.1 (1.0)	3.8 (2.0)
B2	3.1 (1.7)	2.8 (2.2)	2.1 (1.0)	2.0 (1.0)	1.4 (1.0)	2.0 (1.1)	2.9 (1.4)	2.9 (1.8)

STUDY 3 (AMENDED TASC)

GROUP	TA		RSC		PSE		SSA	
	pre	post	pre	post	pre	post	pre	post
E3	14.7 (7.6)	10.3 (7.1)	7.1 (3.9)	4.3 (3.3)	6.2 (3.8)	4.5 (3.6)	10.0 (4.8)	7.8 (5.9)
C3	12.3 (6.2)	9.9 (5.6)	4.6 (3.7)	4.3 (2.1)	6.2 (3.0)	5.7 (4.0)	10.3 (4.6)	8.9 (5.3)
B3	5.2 (3.1)	3.8 (3.0)	1.8 (1.4)	1.8 (1.8)	2.1 (1.5)	2.3 (2.0)	3.3 (2.0)	3.3 (2.9)

APPENDIX K

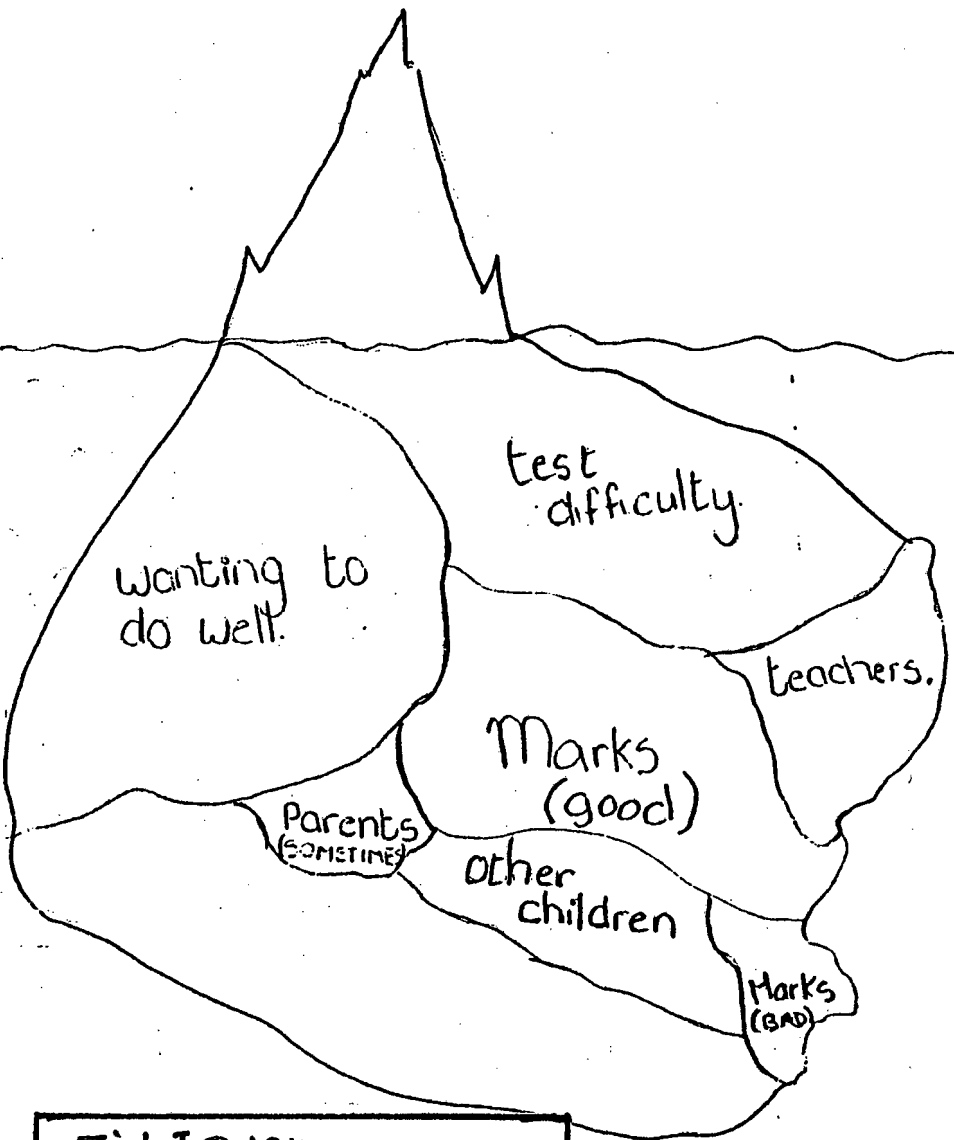
TEST ANXIETY HIERARCHY (DEFFENBACHER & KEMPER, 1974b)

1. YOU ARE IN SCHOOL ON A NORMAL, AVERAGE DAY.
2. YOU ARE AT HOME READING YOUR HOMEWORK.
3. THE TEACHER ANNOUNCES A BIG TEST IN TWO WEEKS.
4. YOU ARE STUDYING FOR A TEST THAT IS A WEEK AWAY.
5. YOU ARE AT HOME STUDYING FOR A BIG EXAM. IT IS TUESDAY, AND THE EXAM IS ON FRIDAY.
6. YOU ARE STUDYING FOR THE BIG EXAM ON FRIDAY, IT IS NOW WEDNESDAY.
7. IT IS THE NIGHT BEFORE THE TEST, AND YOU ARE STUDYING FOR IT AT HOME.
8. IT IS THE MORNING OF THE EXAM, AND YOU ARE GETTING READY TO GO TO SCHOOL.
9. IT IS LUNCH TIME, THE TEST IS RIGHT AFTER LUNCH, YOU ARE STUDYING.
10. YOU ARE IN CLASS WAITING FOR THE TEST TO BE HANDED OUT.
11. YOU ARE TAKING THE TEST, WHILE YOU ARE TRYING TO THINK OF AN ANSWER, YOU NOTICE EVERYONE AROUND YOU WRITING.
12. YOU ARE TAKING THE TEST AND YOU HAVE COME TO A QUESTION YOU CANNOT ANSWER.
13. THE TEACHER SAYS YOU HAVE 15 MINUTES LEFT TO FINISH THE EXAM, AND YOU HAVE A HALF-HOUR'S WORK LEFT TO DO.
14. THE TEACHER SAYS YOU HAVE 5 MINUTES LEFT TO FINISH THE EXAM, AND YOU HAVE 20 MINUTES WORK LEFT TO DO.

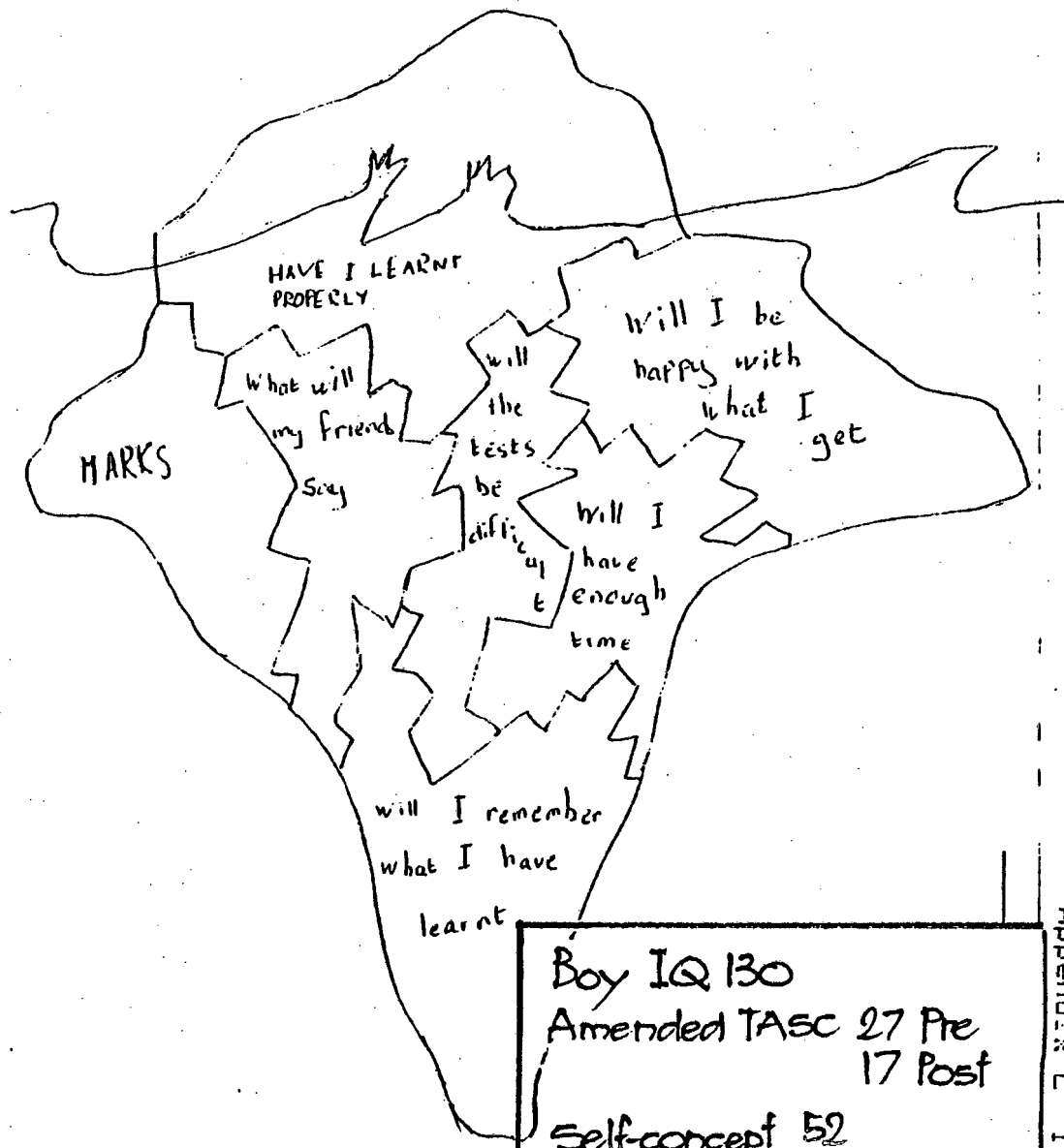
APPENDIX L

THE DRAWINGS OF TEST-ANXIOUS CHILDREN

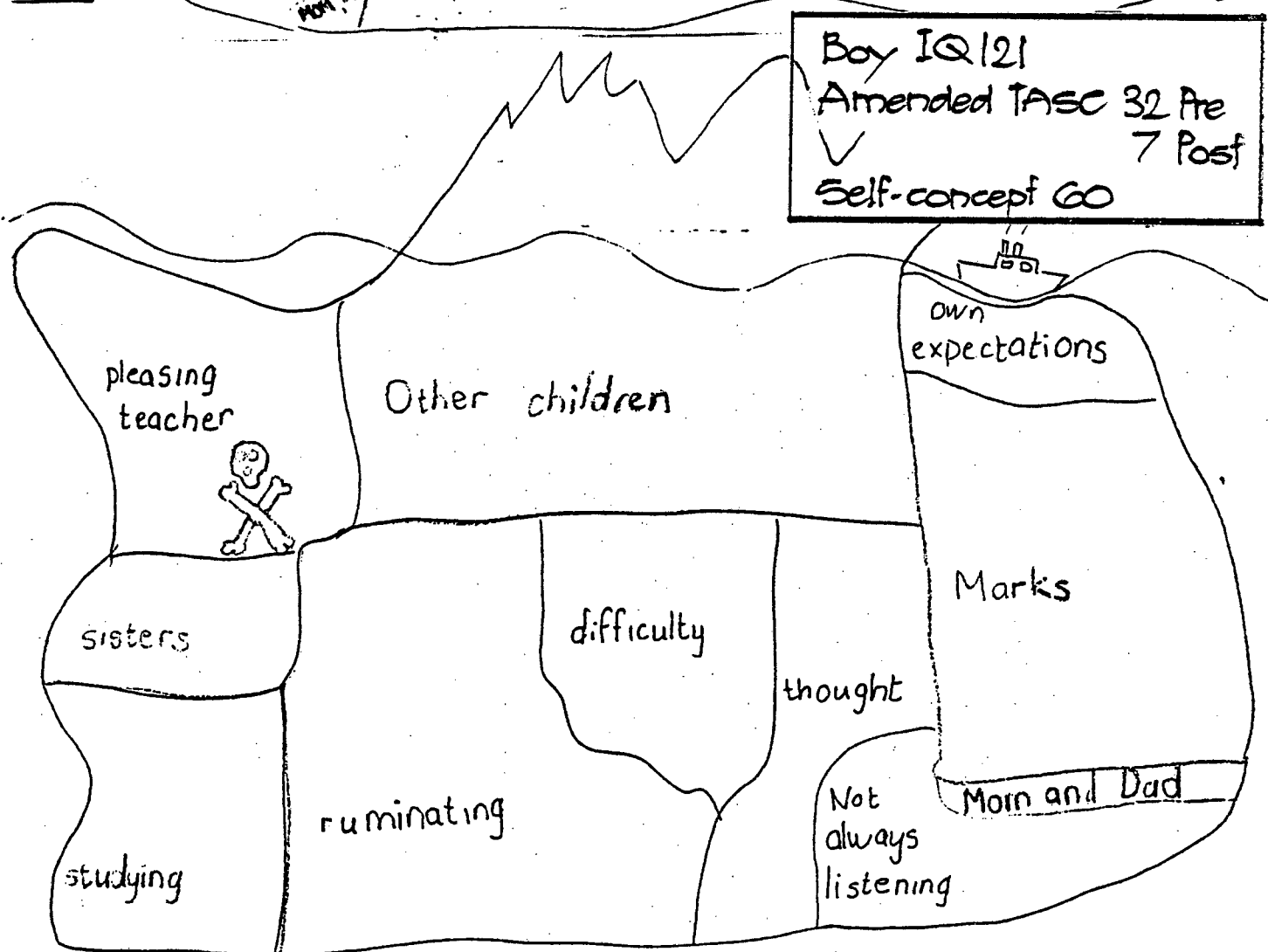
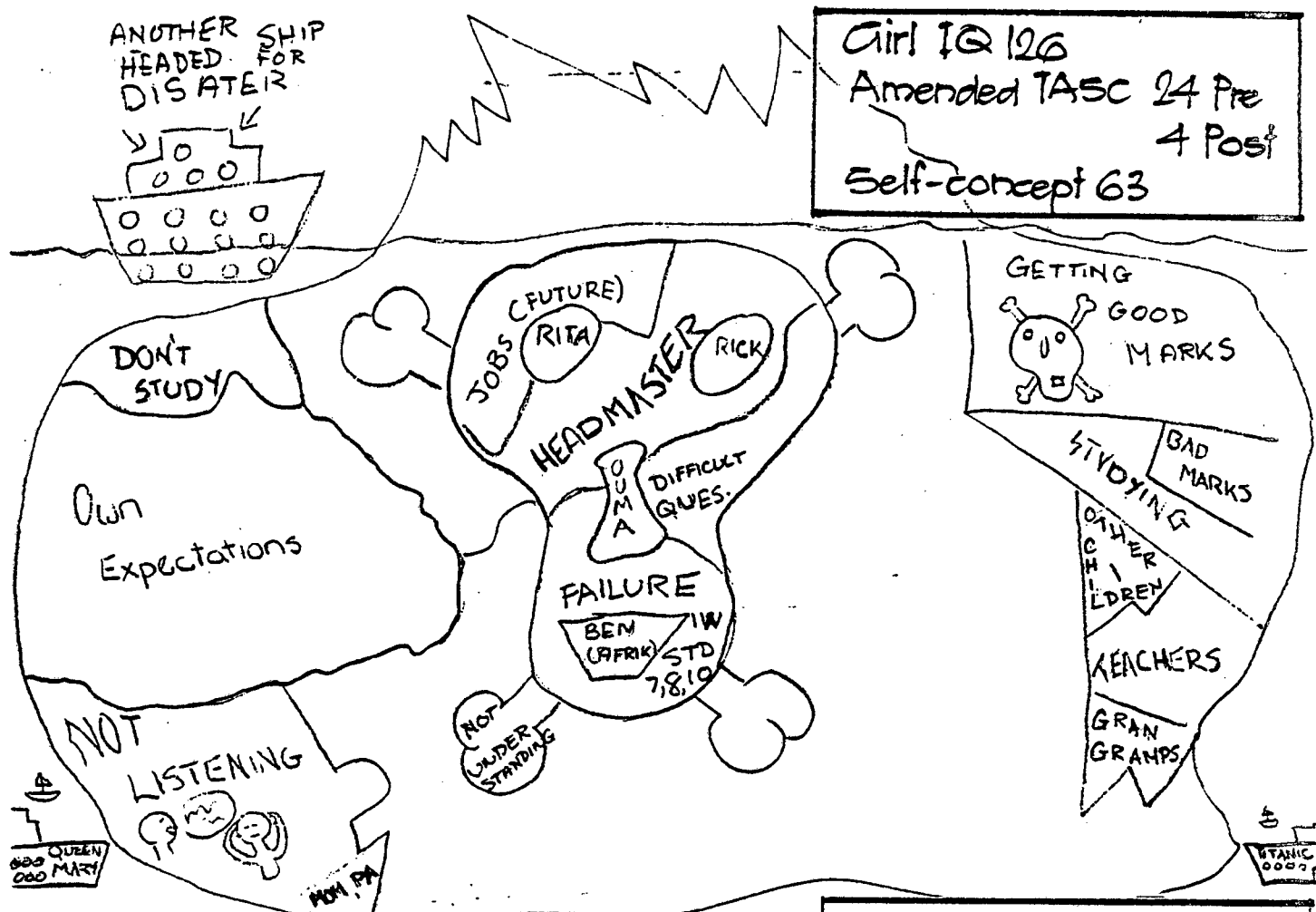
1. CLASS A (HIGH-ABILITY)

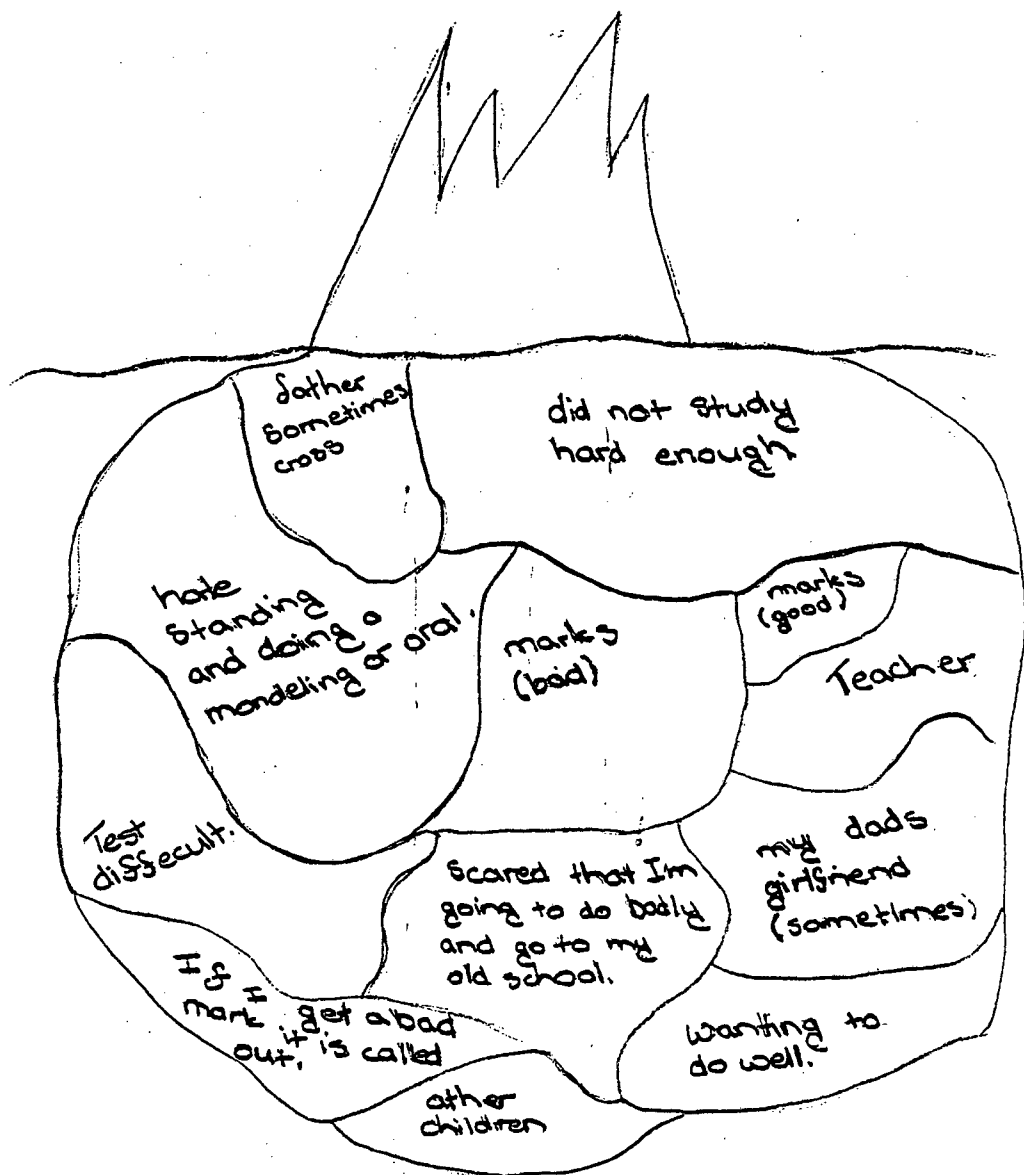


Girl IQ 125
 Amended TASC 20 Pre
 11 Post
 Self-concept 71



Boy IQ 130
 Amended TASC 27 Pre
 17 Post
 Self-concept 52





Girl IQ 110

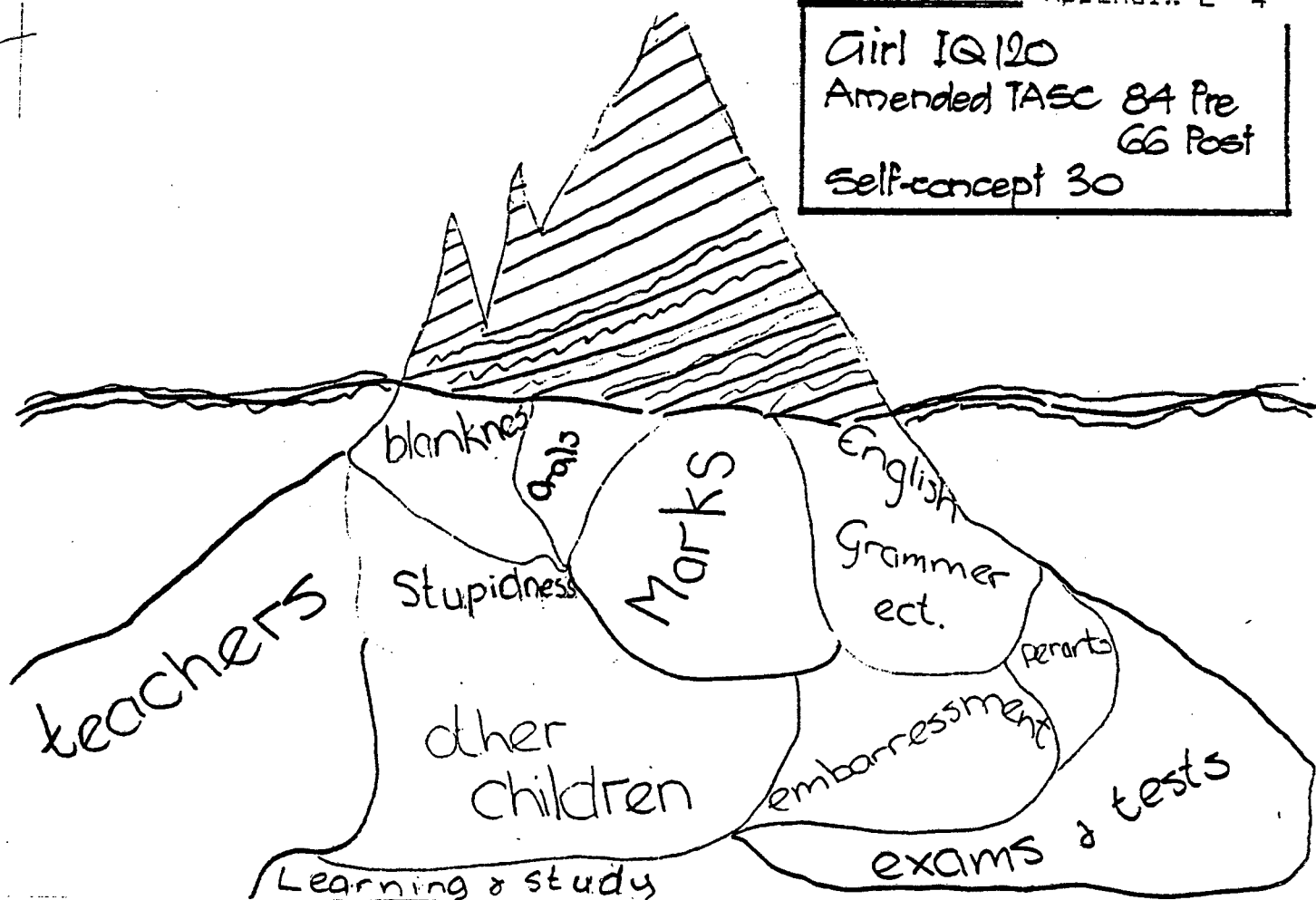
Attended TASC 42 Pre
18 Post

Self-concept 58

THE DRAWINGS OF TEST-ANXIOUS CHILDREN

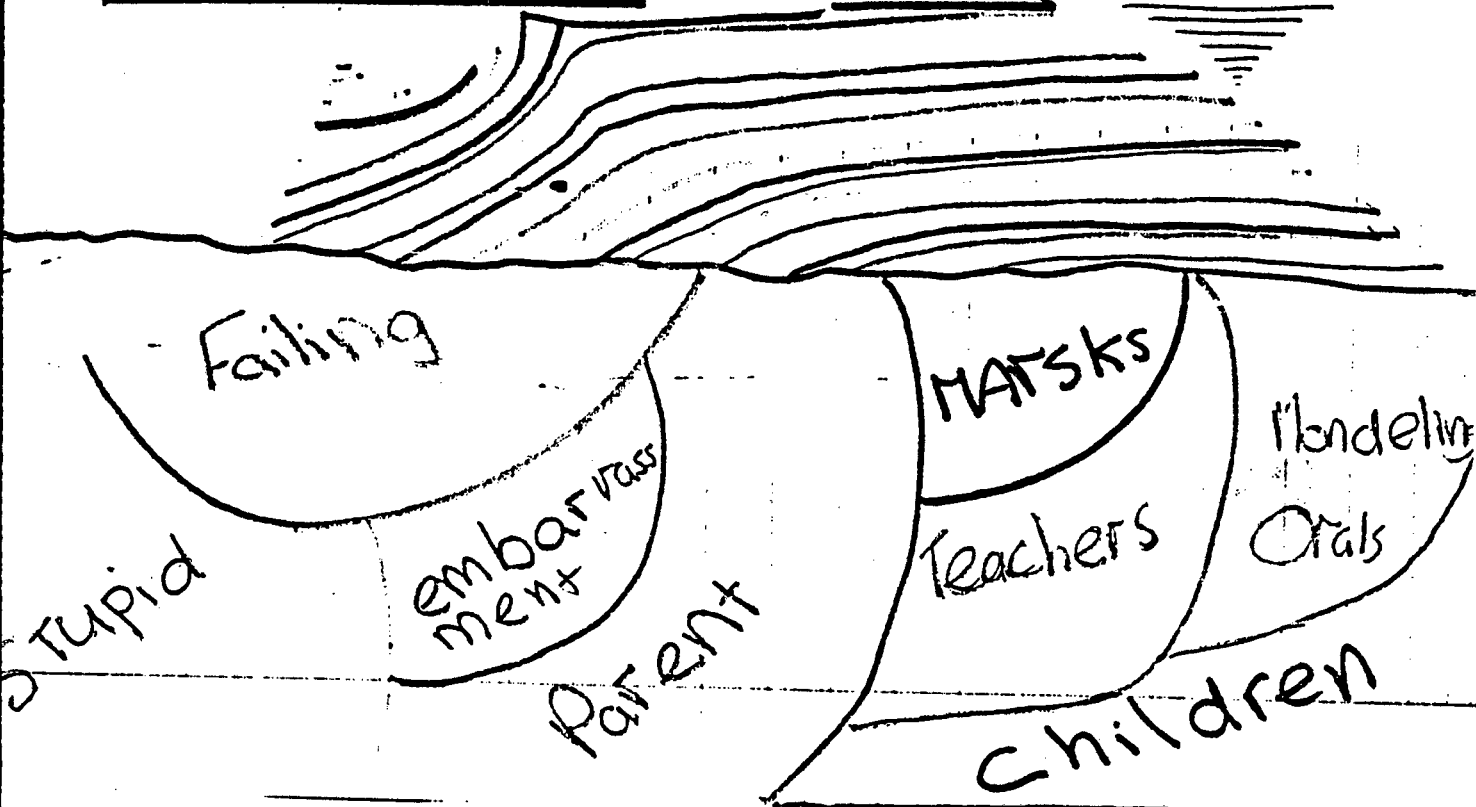
2. CLASS B (LOW-ABILITY)

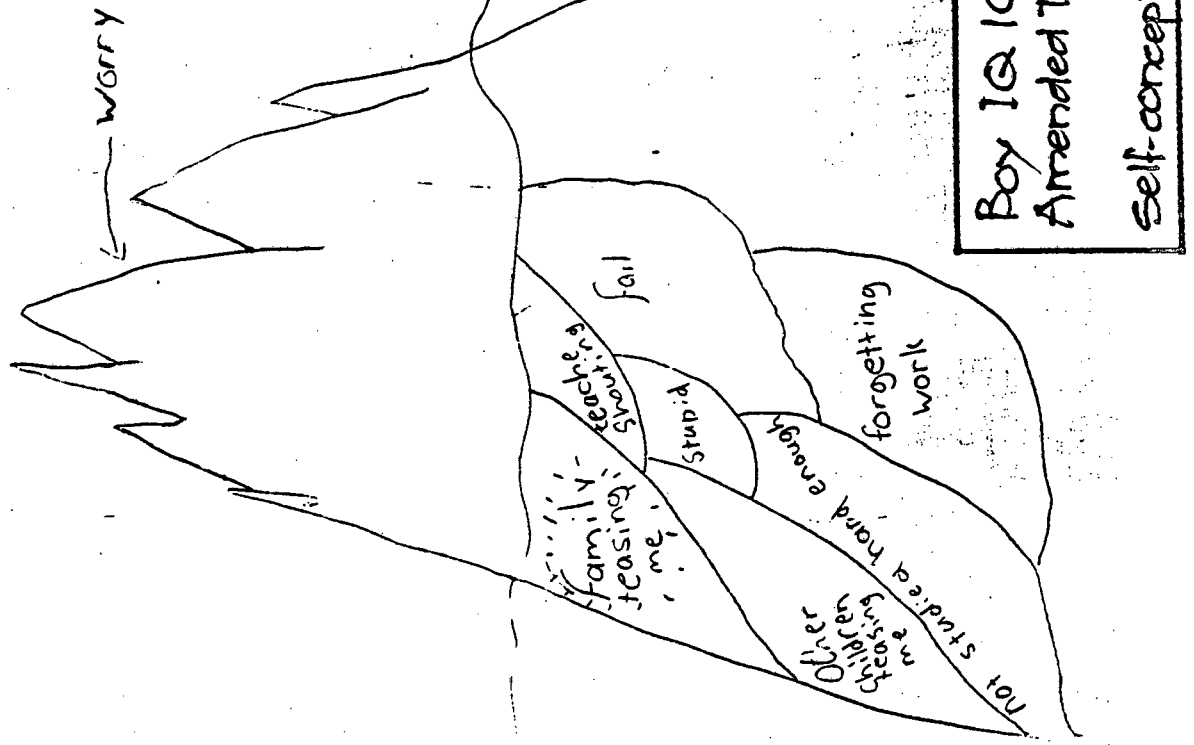
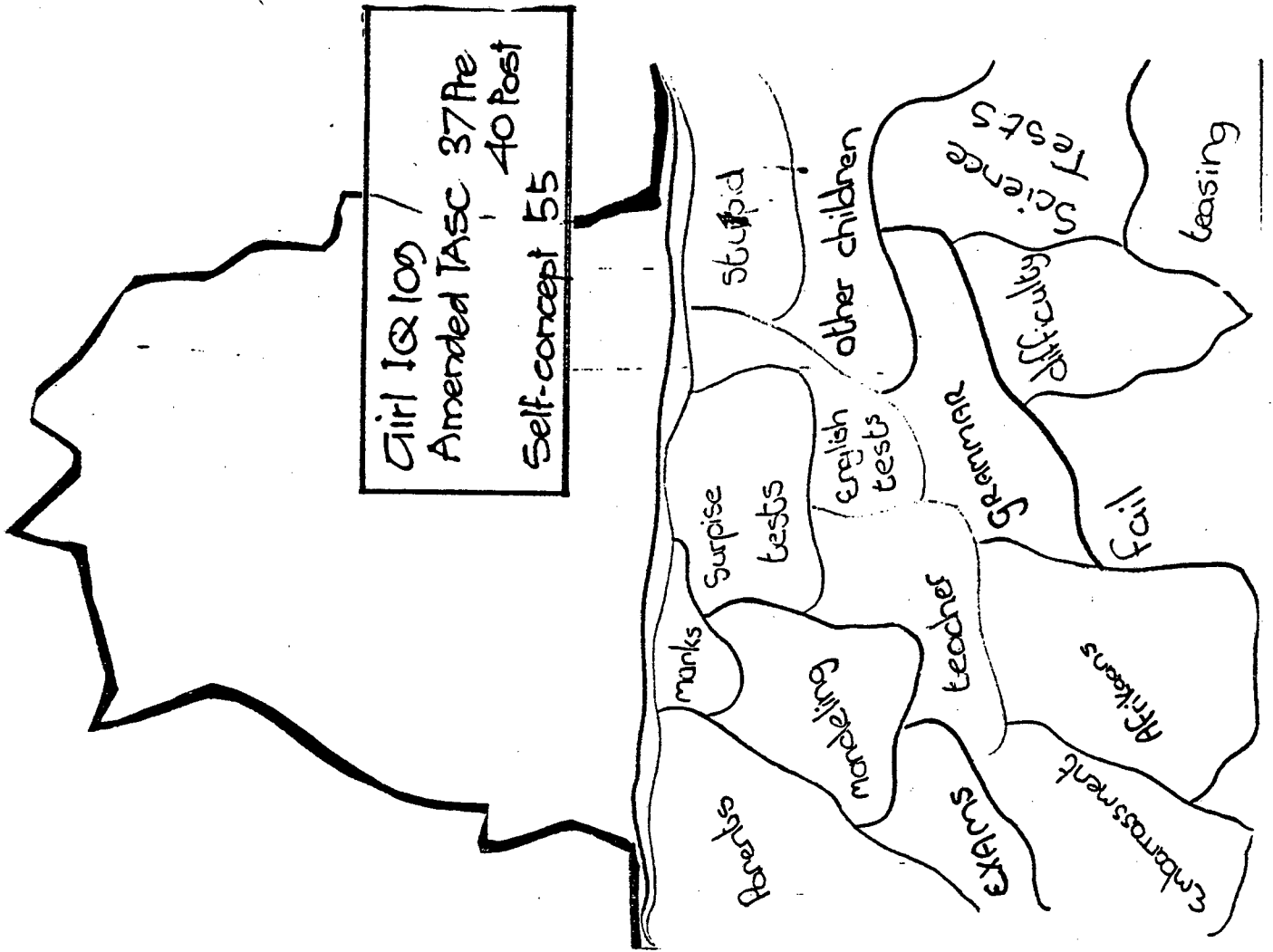
Girl IQ 120
Amended TASC 84 Pre
66 Post
Self-concept 30

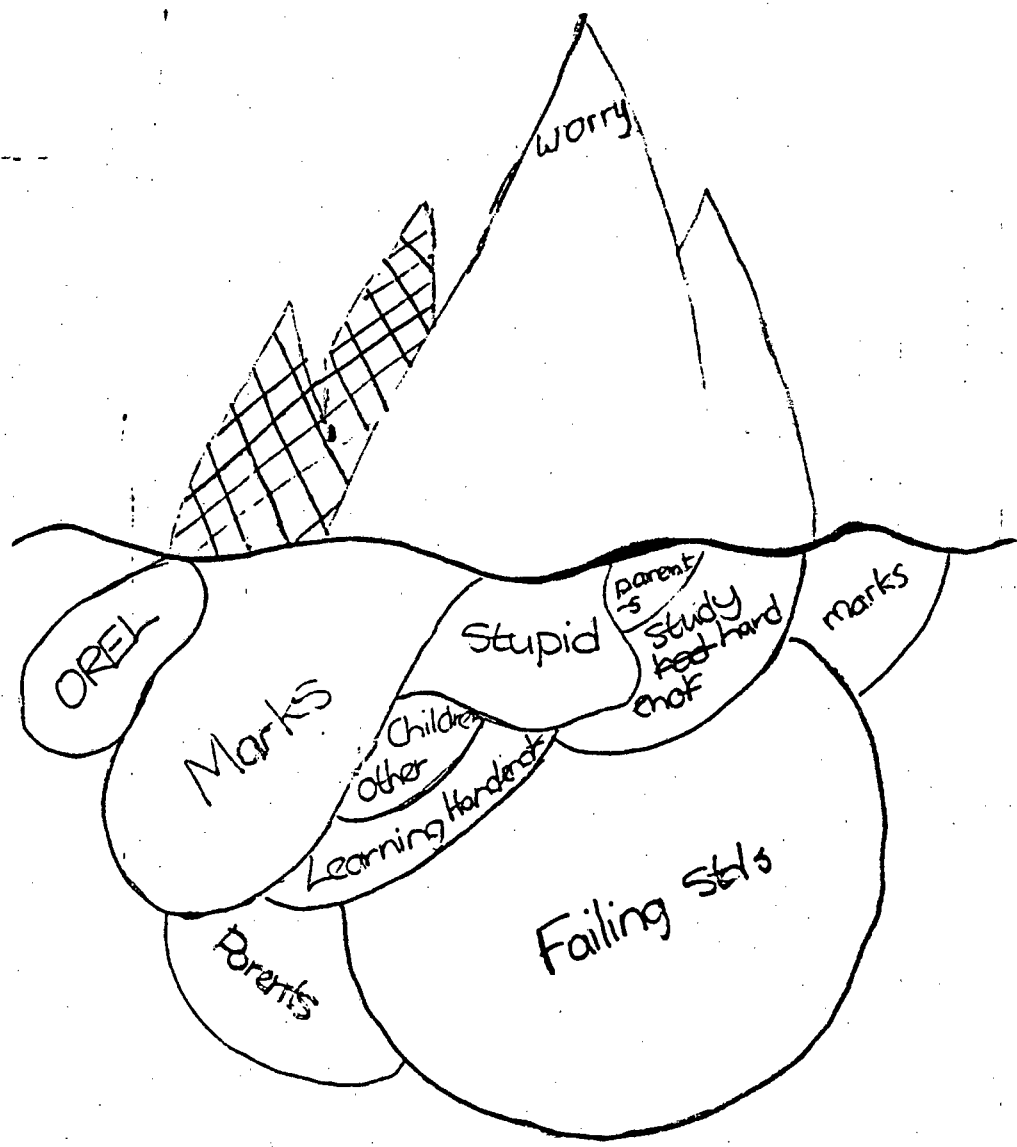


Girl IQ 113
Amended TASC 66 Pre
57 Post
Self-concept 54

all my
WORRIES







Girl IQ 94
Amended TASC 51 Pre
46 Post
Self-concept 36